ANDROID APP DEVELOPMENT

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ANDROID

- Open software platform for mobile development
- Open source under the Apache 2 license
- Uses the Dalvik virtual machines
  - Dex files
  - Compact and efficient than class files
  - Limited memory and battery power
- Fast application development in Java

FEATURES

- **Integrated browser** based on the open source WebKit engine

- **2D** and **3D** graphics

- **SQLite** for structured data storage

- **Bluetooth, EDGE, 3G, and WiFi** (hardware dependent)

- **Camera, GPS, compass, and accelerometer** (hardware dependent)

DEVELOPMENT TOOLS

- Eclipse IDE

- Android SDK

- Android ADT plugin

APPLICATION FUNDAMENTALS

- Written in JAVA programming language.
- Each app has its own virtual machine (VM), so an application's code runs in isolation from other applications but one can share data between applications.
- Application Components
  - Activities
  - Services
  - Content Providers
  - Intents and Intent filters

ACTIVITY

- Typically correspond to one UI screen

- An application is composed of several activities.

- A different application can also start any one of these activities (if the application allows it)

- This allows us to use the pre-existing apps for doing certain tasks.

SERVICES

- Components that run in the background

- A service does not provide a user interface

- Used to perform long-running operations

CONTENT PROVIDERS

- Enables sharing of data across applications
  - E.g. address book, photo gallery

- Provides uniform APIs for:
  - querying
  - delete, update and insert.

INTENTS

- Think of Intents as a verb and object; a description of what you want done
  - E.g. VIEW, CALL, PLAY etc..

- System matches Intent with Activity that can best provide the service

- Activities and Intent Receivers describe what Intents they can service

Intent Receivers

- Components that respond to broadcast 'Intents'

- Way to respond to external notification or alarms

- Apps can invent and broadcast their own Intent

CREATING AN ACTIVITY

- Declare the activity in manifest file

- Important Callbacks
  - onCreate()
  - onPause()

- Now, its time to implement the user interface

COMPONENTS FOR UI

- **Layout**
  - Defined using an XML file

- **Widgets**
  - View object that serves as an interface for interaction with the user.