

# ANDROID ARCHITECTURE

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- Run on top of Linux 2.8
- Dalvik virtual machine optimized for mobile devices.
- Integrated browser based on the WebKit engine.
- Optimized graphics with OpenGL ES
- SQLite database for structured data storage.

[http://en.wikipedia.org/wiki/Android\\_%28operating\\_system%29](http://en.wikipedia.org/wiki/Android_%28operating_system%29)

# ANDROID VERSIONS

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- Android 2.0 / 2.1 Eclair
- Android 2.2 Froyo
- Android 2.3 Gingerbread
- Android 3.0 Honeycomb (targeted at tablet devices)
- Android 4.0 Ice Cream Sandwich
- Android 4.1-3 Jelly Bean
- Android 4.4 *KitKat*
- Android 5.0 *Lollipop*

[http://en.wikipedia.org/wiki/Android\\_version\\_history](http://en.wikipedia.org/wiki/Android_version_history)

# APPLICATION FUNDAMENTALS

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- Applications are written in Java
- Compiled into Android package file (.apk)
- Each application runs in its own Linux process
- Applications consist of Components, a manifest file and resources
- Components
  - Activities
  - Services
  - Content providers
  - Broadcast receivers

<http://developer.android.com/guide/components/fundamentals.html>

# ACTIVITIES

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- An activity represents a single screen with a user interface
- Most applications contain multiple activities
- When a new activity starts, it is pushed onto the back stack
- User interface can be built with XML or Java
- Monitor life span through callback methods like `onStart()`, `onPause()`

# SERVICES

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- Services perform long-running operations in the background
- Does not contain a user interface
- Useful for things like network operations, playing music, etc.
- Runs independently of the component that created it
- Can be bound to by other applications, if allowed

# CONTENT PROVIDERS

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- Used to store and retrieve data and make it accessible to all applications
- Are the only way to share data across applications
- Exposes a public URI
- Android contains many providers for things like contacts, media ,etc

# BROADCAST RECEIVERS

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- A component that responds to system-wide broadcast announcements
- Examples include when the screen turns off, battery is low etc
- Applications can initiate their own broadcasts
- Broadcast receivers contain no user interface
- They can create status bar notifications

# ANDROID MANIFEST FILE

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- Applications must have an AndroidManifest.xml file in root directory
- Presents information about the application to Android system
- Describes the components used in the application
- Declares the permissions required to run the application
- Declares the minimum Android API level