

INTRODUCTION TO ANDROID

Gradle, Android components, manifests,
permissions

Gradle

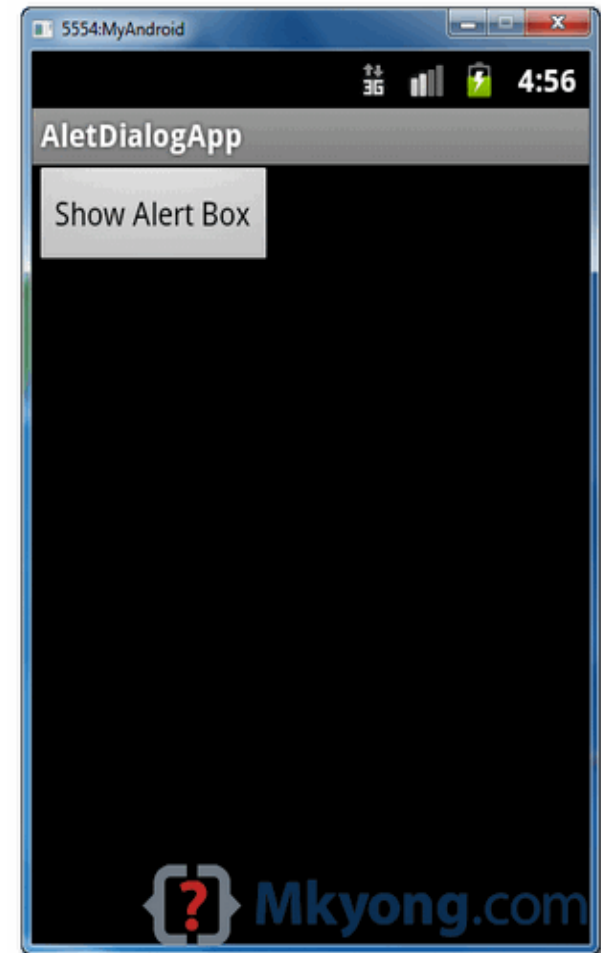
- is an Open Source build system based on a based Groovy DSL,
- it comes with a built in Maven/Ivy based dependency management system.
- supports custom plugins.
- for more information please read
 - <http://tools.android.com/tech-docs/new-build-system/user-guide>
 - <https://gradle.org/whygradle-build-automation/>

Android Components

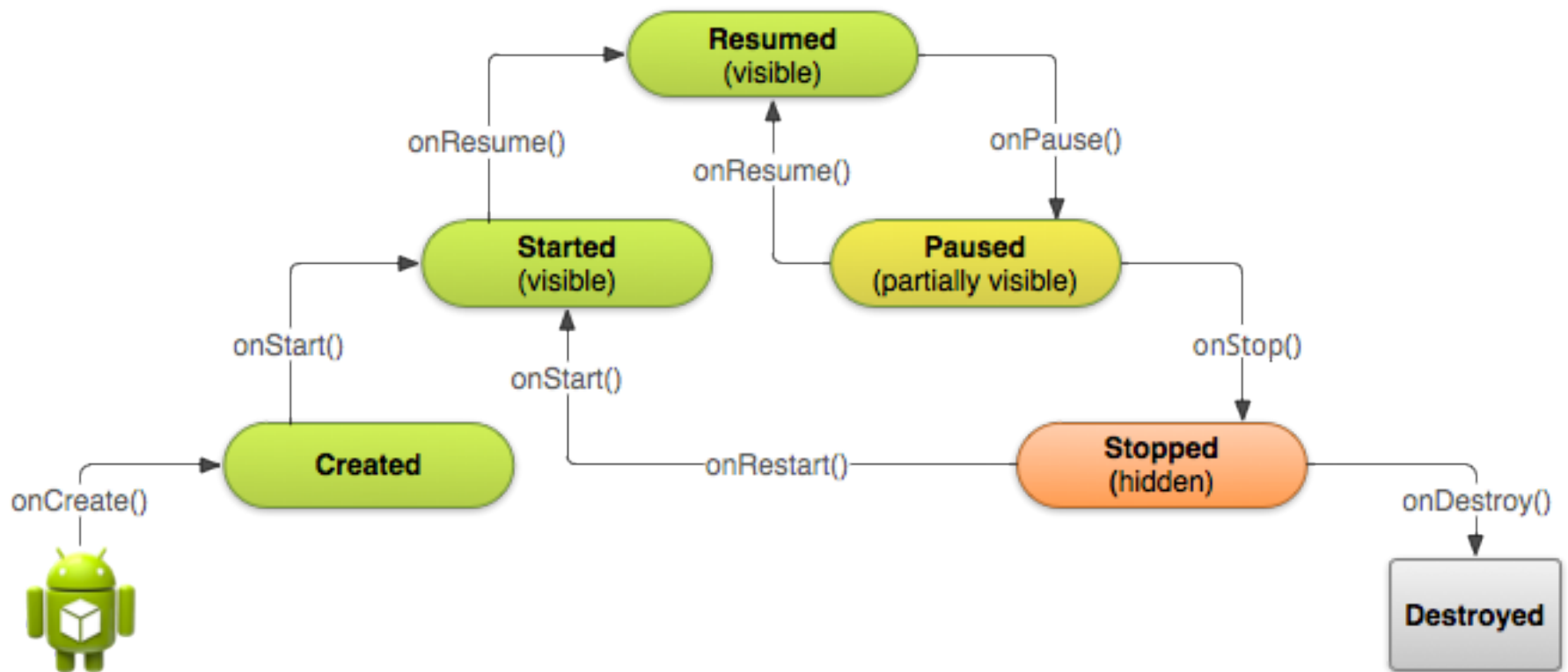
- Activities
 - Fragments
- Intents
- Services
- Broadcast Receivers
- Content Providers
- Application

Activities

- Single focused window that a user can interact with.
- Every window view is an activity.
 - Not every view is an activity
- derived by extending the Activity class
- An activity has a lifecycle of its own.
 - more in the next lesson ...



Activity lifecycle



Fragments

- can be sub-activities in an Android Application.
- they can be used to make sub-activities re-usable.
- more info here: -
 - <http://www.vogella.com/tutorials/AndroidFragments/article.html>
- they also have a lifecycle of their own.
- *we will mostly ignore fragments throughout the course.*

Intents

- is an abstract description of an operation to be performed
- to launch an activity
 - *startActivity(new Intent(context, ActToStart.class));*
- to start a Service
 - *startService(new Intent(context, ServToStart.class));*
- Primary pieces of data for an intent
 - action – ACTION_VIEW, ACTION_DIAL, ACTION_EDIT
 - data – content://contacts/person1, tel://123

Intents continued ...

- Explicit Intents: - have a specified component.
 - `startActivity(new Intent(this, Activity.class));`
- Implicit Intents: - unspecified component, should include enough information for the system to identify a component.
 - `Intent i = new Intent(ACTION_DIAL, Uri.parse("tel:" + "123"));`
 - `startActivity(i);`
- More information here : -
 - <https://developer.android.com/reference/android/content/Intent.html>

Services

- are used to run tasks in the background ...
- Please remember services by default run on the *main thread*.
- IntentService runs on background thread.
- derived by extending the Service class.
- started/bound by calling: -
 - *startService(intent)/bindService(intent);*
- Always remember to *stop/unbind* a started Service

Broadcast Receivers

- alive for a very short time (10 seconds).
- No asynchronous code.
- for code/dynamic registration always *unregister* a Receiver when not required.
- 2 kinds of broadcast:
 - Normal – asynchronous, unordered
 - Ordered – ordered, delivered in series
- for app level broadcasts use *LocalBroadcastManager* .

Content Providers

- provides access to a structured set of data and defines its security mechanisms.
- are standard mechanisms that connects data in one process to code running on another process.
- You access a provider by using a ContentResolver object.
- Android itself includes providers for audio, video, images and contacts.
- more info here - <https://developer.android.com/guide/topics/providers/content-providers.html>

Application

- Base class for maintaining global application state.
- Provide your own implementation: -
 - by sub-classing *Application* class
 - and adding class name in AndroidManifest.xml
- in most cases can use static singletons instead, and in a more modular way.
- More info here : -
<https://developer.android.com/reference/android/app/Application.html>

Manifests

- Every app must have an *AndroidManifest.xml* file in its root directory.
- It provides essential information about an app to the Android system.
 - names the App package name
 - describes the app components
 - declares app permissions
 - min and max supported android versions etc.
 - more info here - <https://developer.android.com/guide/topics/manifest/manifest-intro.html>

Permissions

- is a restriction that limits access to code or data in the device.
- identified by a unique label : -
 - *LOCATION, NETWORK, DEVICE_POWER.*
- From Android 6.0 permissions are more granular and dynamic much like iOS.
- more info here: -
<https://developer.android.com/guide/topics/manifest/manifest-intro.html#perms>

Questions ???

Sources

- <https://developer.android.com/training/index.html>
- <https://developer.android.com/guide/topics/providers/content-providers.html>
- https://github.com/codepath/android_guides/wiki#getting-started
- <https://developer.android.com/training/articles/perf-tips.html>
- <https://android-arsenal.com/>