Interactive Mobile Development

BROADCASTS

Introduction

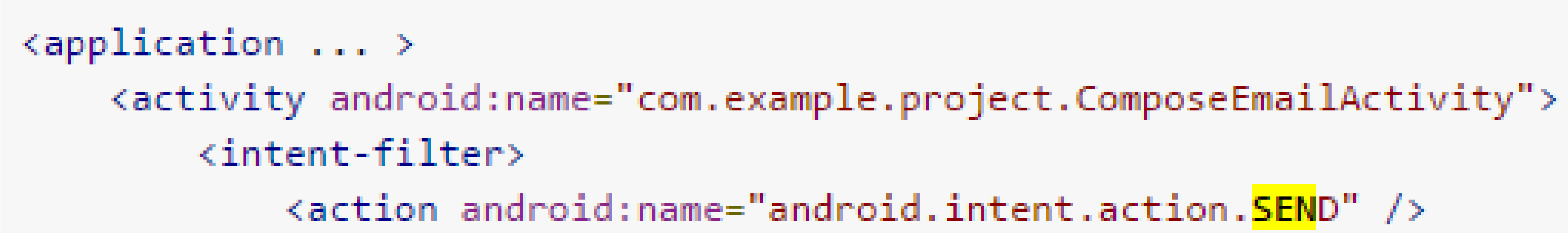
- Messages from applications or the system itself
- Sometimes called events or intents
- Ex:
  - An application initiate a broadcast to let other applications know that some data has been downloaded to the device and is available for them to use
  - A device broadcasts to all broadcasts receivers to communicate that a call is incoming
- Other System Broadcasts: the screen has turned off, the battery is low, a pictured was captured

Broadcast Receiver

- Responds to broadcasts
- An Android component which allows you to register for system or application events.
- All registered receivers for an event are notified by the Android runtime once this event happens
- Ex. ACTION_BOOT_COMPLETE is a system event which is fired once the Android System has completed the boot process

Intents and Intent Filters

- Intents are used to deliver a broadcast to other apps
- Intent filter is an expression in an app’s manifest file that specifies the type of intents that the component would like to receive



```
<application ... >
    <activity android:name="com.example.project.ComposeEmailActivity">
        <intent-filter>
            <action android:name="android.intent.action.SEND" />
```

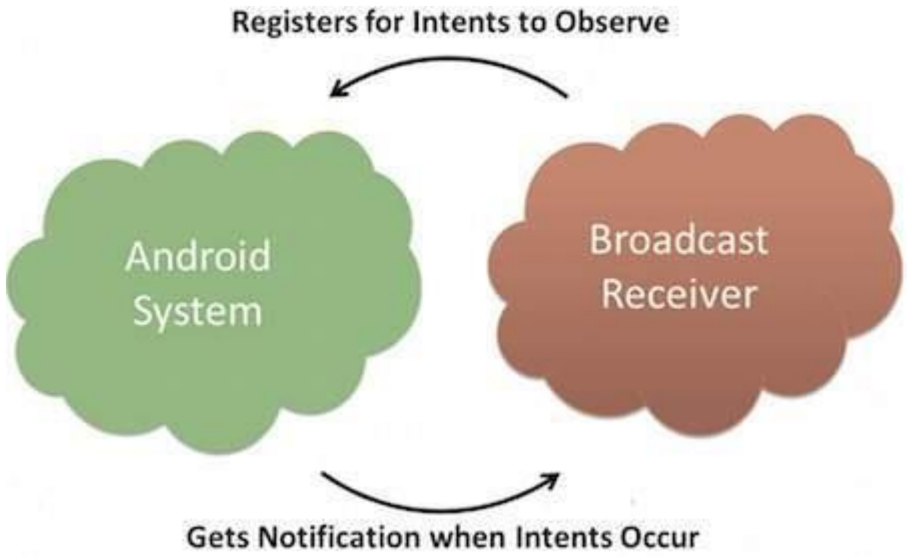
- An Intent filter to respond to *send* is declared within the manifest file of an application use for composing new E-mails
- Other apps which create an intent with the ACTION_SEND action and passes it to *startActivity(),* the system may start the activity defined above

Sticky Intents

- Sticks with android for future broadcast listeners
- Ex. If BATTERY_LOW event occurs then that intent will stick with android so that other applications can quickly retrieve the data once executed

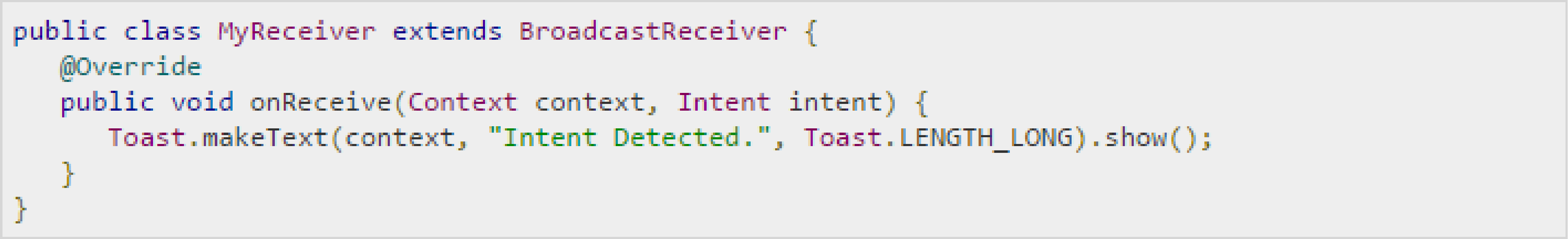
Implementing a Broadcast Receiver

- There are 2 steps to make a Broadcast Receiver work for the system broadcasted intents
  - Creating the Broadcast Receiver
  - Registering Broadcast Receiver


Registers for Intents to Observe
Android System
Broadcast Receiver
Gets Notification when Intents Occur

Creating the Broadcast Receiver

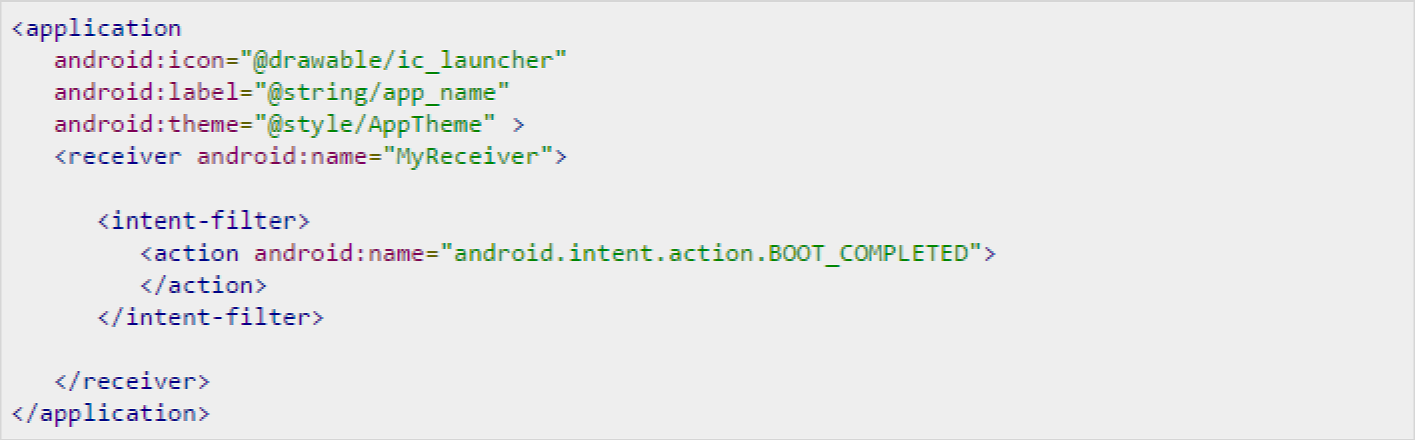
1. Subcass **BroadcastReceiver** class
2. Override the *onReceive()* method which receive message as an Intent Object



```
public class MyReceiver extends BroadcastReceiver {
   @Override
   public void onReceive(Context context, Intent intent) {
      Toast.makeText(context, "Intent Detected.", Toast.LENGTH_LONG).show();
   }
}
```

Registering Broadcast Receiver

- An application only listens for broadcast intents which are registered in *AndroidManifest.xml*



```
<application
   android:icon="@drawable/ic_launcher"
   android:label="@string/app_name"
   android:theme="@style/AppTheme" >
   <receiver android:name="MyReceiver">

      <intent-filter>
         <action android:name="android.intent.action.BOOT_COMPLETED">
         </action>
      </intent-filter>

   </receiver>
</application>
```

Broadcasting Custom Intent

- Each app can broadcast a custom intent using *sendBroadcast()* method inside an activity class.

```
public void broadcastIntent(View view) {
    Intent intent = new Intent();
    intent.setAction(“mt.edu.mcast.CUSTOM_INTENT");
    sendBroadcast(intent);
}
```

Registering Custom Intent

- The intent mt.edu.mcast.CUSTOM_INTENT can be registered with other apps to receive the broadcast

```
<application
    android:icon="@drawable/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/AppTheme" >
    <receiver android:name="MyReceiver">
        <intent-filter>
            <action android:name=“mt.edu.mcast.CUSTOM_INTENT">
            </action>
        </intent-filter>
    </receiver>
</application>
```

Restrictions for defining broadcast receiver

- As of Android 3.1 the Android system excludes all receivers from receiving intent by default if the corresponding application has never been started by the user of if the user explicitly stopped the application via the Android menu (Force close)
- *This is an addition security feature as the user can be sure that only the applications he started will receive broadcast intents*