

# Working with Broadcast Receivers

---



**Jim Wilson**

MOBILE SOLUTIONS DEVELOPER & ARCHITECT

@hedgehogjim [blog.jwhh.com](http://blog.jwhh.com)



# What to Expect from This Module



**Broadcasts**

**Sending Broadcasts**

**Implementing a Broadcast Receiver**

**Context Registered Receivers**

**Manifest Declared Receivers**



# Broadcasts

## **Publish/Subscribe**

- Common model for distributing events
- One party acts as the publisher
- One or more parties can be subscribers



# Broadcasts

## **Android broadcasts**

- Local device publish/subscribe model

## **Sending a broadcast**

- Publishing information

## **Broadcast receiver**

- Receives broadcast information
- Implemented by subscribers



# Broadcasts

## **System sends a number of broadcasts**

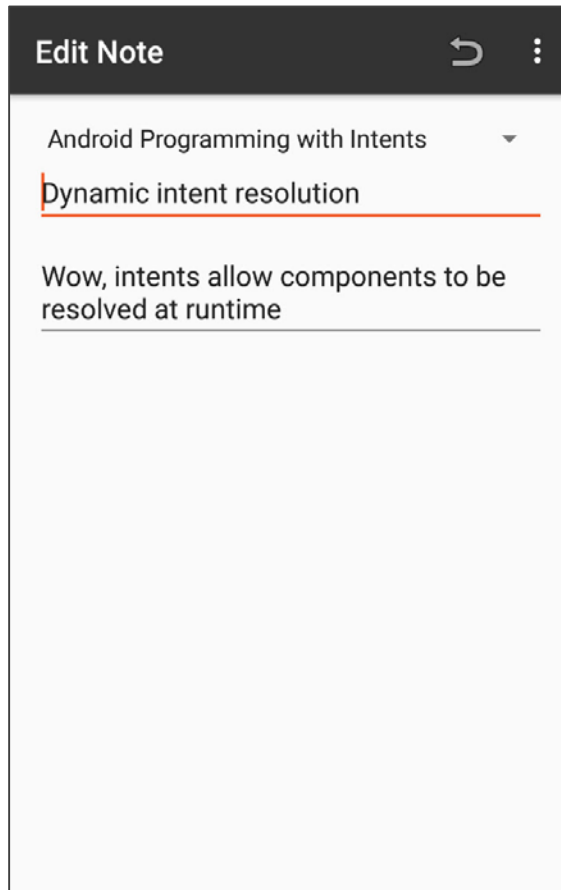
- Entering/leaving airplane mode
- Start/stop charging
- Device just finished booting
- Many others...

## **Apps can send broadcasts**

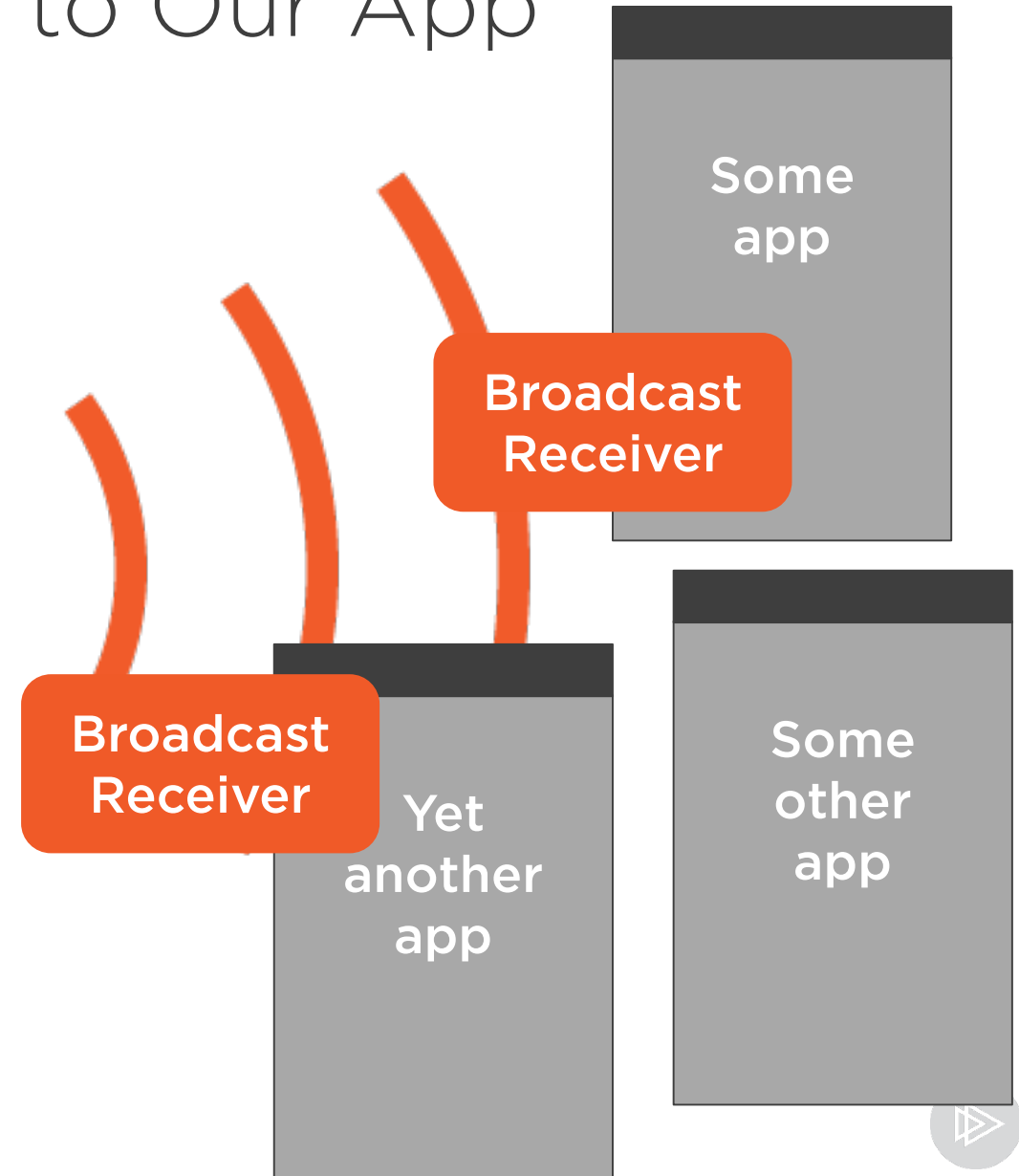
- Can define custom broadcasts
- Available to other apps on the device



# Adding Broadcasts to Our App



sendBroadcast



# Sending Broadcasts

**Any app component can send a broadcast**

- Use `Context.sendBroadcast`

**Broadcasts messages sent as intents**

- Commonly use implicit intent



# A Quick Refresher on Intents

## Explicit intent

- Target is explicitly identified
- Specify the component class to use

## Implicit intent

- Target is implied
- Specify characteristics





# A Quick Refresher on Implicit Intent Characteristics

## Action

- The general action this intent represents
- Many standard constants available
- Can use app-defined string
- Only required characteristic

## Category

- Provides extended qualification
- Not normally used by sender



# A Quick Refresher on Implicit Intent Characteristics

## Data

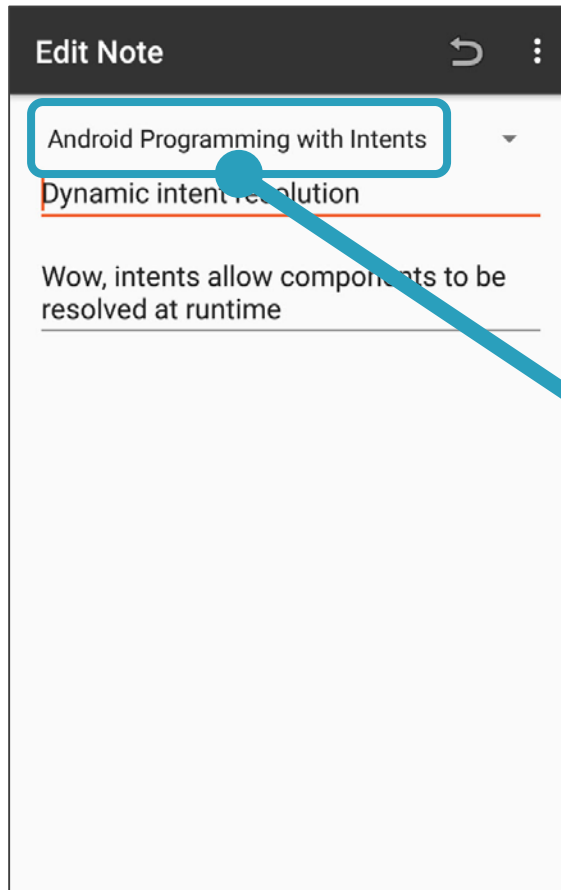
- URI of data to be acted upon
- Example: <https://pluralsight.com>

## Mime type

- Common or app-specific mime type
- Example: text/html



# Adding Broadcasts to Our App



sendBroadcast

Action. **COURSE\_EVENT**

Extras

**COURSE\_ID = "android\_intents"**  
**MESSAGE = "Editing Note"**



# Broadcast Receivers

**BroadcastReceiver is an Android component**

- Handles broadcasts
- Does not present a UI

**Implementing a BroadcastReceiver**

- Extend BroadcastReceiver class
- Must override onReceive



# Broadcast Receivers

## **onReceive method**

- Called when broadcast received

## **onReceive Parameters**

- Context
- The intent that was broadcast

## **Doing work in onReceive**

- Runs on main app thread
- Keep work short



# Context Registered Receivers

## **Receivers can be registered at runtime**

- Known as a context-registered receiver
- Receiver instance explicitly constructed

## **Registering the receiver**

- Use `Context.registerReceiver`

## **Must unregister receiver when done**

- Use `Context.unregisterReceiver`



# Context Registered Receivers

**Must register which broadcasts to handle**

- Identify the intents of interest

**IntentFilter class**

- Identifies intent characteristics to match



# Context Registered Receivers

## **IntentFilter constructor**

- Can specify action to match
- Can specify mime type to match

## **Can add additional characteristics to match**

- Actions
- Mime types
- URIs
- Categories





# Manifest Declared Receivers

## **System can create receiver instance**

- Broadcast receiver must be in manifest

## **System will manage receiver lifecycle**

- Created when broadcast received
- Will launch process if not running
- Destroyed when onReceive returns



# Manifest Declared Receivers

## Broadcast sent with implicit intent

- Receiver specifies filter in manifest
- Useful in very limited situations
- In general can use job scheduler instead
- Android 8 (API 26) and up allow use in only very specific scenarios

## Broadcast sent with explicit intent

- Identifies a specific receiver explicitly



# Summary



## Android broadcasts

- Local device publish/subscribe model
- System can send broadcasts
- Apps can send broadcasts

## Broadcast messages sent as intents

- Apps commonly send as implicit intents

## Summary



### Broadcast receiver handles broadcasts

- Implement by extending the BroadcastReceiver class

### Doing broadcast receiver work

- Override onReceive method
- Runs on main app thread

### onReceive parameters

- Context
- The intent that was broadcast



# Summary



## Context registered receivers

- Instance created by app code
- Registered at runtime

## Specifying which broadcasts to handle

- Use IntentFilter
- Identifies characteristics to match

# Summary



## **Manifest declared receivers**

- System manages receiver lifecycle
- Will create process if necessary
- Implicit intents OK in specific scenarios
- Explicit intents more generally useful