Chapter 8
Broadcast Receiver

Outline

- Definition

- Registering a receiver

- Broadcast intents

- Type of broadcasts

- Examples

Definition

○ A broadcast receiver is a dormant component of the Android system

○ Only an Intent (for which it is registered) can bring it into action

○ Using a Broadcast Receiver, applications can register for a particular event. Once the event occurs, the system will notify all the registered applications. Examples: Boot completed, Time tick, SMS received, …

Step 1 – Create a Broadcast component

○ Create a class that extends android.content.BroadcastReceiver

○ Should override the method onReceive( )

```java
public class MyReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context arg0, Intent arg1) {

    }
}
```

Step 2 - Registering a receiver

○ There are two ways to register a Broadcast Receiver; one is Static and the other Dynamic.

○ Static:
- Use <receiver> tag in your Manifest file.
- Not all events can be registered statically
- Some events require permission
- Available whether or not the app is running

○ Dynamic:
- Use Context.registerReceiver( ) method to dynamically register an instance.
- Note: Unregister when pausing

Step 2 - Registering a receiver – Static

```xml
<receiver android:name="MyReceiver">
    <intent-filter>
        <action android:name="android.intent.action.BATTERY_LOW"/>
        <action android:name="android.intent.action.ACTION_POWER_CONNECTED"/>
        <action android:name="com.example.Receiver1"/>
    </intent-filter>
</receiver>
```

Step 2 - Registering a receiver – Dynamic

MyReceiver myReceiver = new MyReceiver();

....

registerReceiver(myReceiver, new IntentFilter(Intent. ACTION_POWER_CONNECTED));

Step 3 – Sending Broadcast intents

o Broadcast intents are Intent objects that are broadcast via a call to the **sendBroadcast()**, **sendStickyBroadcast()** or **sendOrderedBroadcast()** methods of the Activity class

o In addition to providing a messaging and event system between application components, broadcast intents are also used by the Android system to notify interested applications about key system events (such as the external power supply or headphones being connected or disconnected).

Step 3 – Sending Broadcast intents

Intent intent = new Intent("**com.example.Receiver1**");
intent.putExtra("keyName", 1000);
sendBroadcast(intent);

Note that system broadcasts are sent to all apps that are subscribed to receive the event

Step 3 – Sending Broadcast intents

○ Ordered Broadcasts:
- These broadcasts are synchronous and follows the order specified using **android:priority** attribute.
- The receivers with greater priority would receive the broadcast first.

○ Normal Broadcasts:
- Normal broadcasts are not orderly.

How it works?

⚬ When a matching broadcast action is detected, the onReceive() method of the broadcast receiver is called, at which point the method has 10 seconds within which to perform any necessary tasks before returning.

   ⚬ When it runs on the main thread you should never perform long-running operations in it (max 10 s)

   ⚬ You cannot launch a popup dialog in your implementation of onReceive().

Examples

○ReceiverDemo1
- Sample application with 3 receivers:
  - ○static receiver (fired by a button)
  - ○dynamic receiver (fired by a button)
  - ○dynamic receiver (fired every minute by the system)

○ReceiverDemo2
- Application with 2 receivers
  - ○One that listens for incoming calls
  - ○One that listens for incoming sms

- android.app.action.ACTION_PASSWORD_CHANGED

- android.app.action.ACTION_PASSWORD_EXPIRING

- android.app.action.ACTION_PASSWORD_FAILED

- android.app.action.ACTION_PASSWORD_SUCCEEDED

- android.app.action.DEVICE_ADMIN_DISABLED

- android.app.action.DEVICE_ADMIN_DISABLE_REQUESTED

- android.app.action.DEVICE_ADMIN_ENABLED

- android.bluetooth.a2dp.profile.action.CONNECTION_STATE_CHANGED

- android.bluetooth.a2dp.profile.action.PLAYING_STATE_CHANGED

- android.bluetooth.adapter.action.CONNECTION_STATE_CHANGED

- android.bluetooth.adapter.action.DISCOVERY_FINISHED

- android.bluetooth.adapter.action.DISCOVERY_STARTED

- android.bluetooth.adapter.action.LOCAL_NAME_CHANGED

- android.bluetooth.adapter.action.SCAN_MODE_CHANGED

- android.bluetooth.adapter.action.STATE_CHANGED

- android.bluetooth.device.action.ACL_CONNECTED

- android.bluetooth.device.action.ACL_DISCONNECTED

- android.intent.action.MEDIA_EJECT
- android.intent.action.MEDIA_MOUNTED
- android.intent.action.MEDIA_NOFS
- android.intent.action.MEDIA_REMOVED
- android.intent.action.MEDIA_SCANNER_FINISHED
- android.intent.action.MEDIA_SCANNER_SCAN_FILE
- android.intent.action.MEDIA_SCANNER_STARTED
- android.intent.action.MEDIA_SHARED
- android.intent.action.MEDIA_UNMOUNTABLE
- android.intent.action.MEDIA_UNMOUNTED
- android.intent.action.MY_PACKAGE_REPLACED
- android.intent.action.NEW_OUTGOING_CALL
- android.intent.action.NEW_VOICEMAIL
- android.intent.action.PACKAGE_ADDED
- android.intent.action.PACKAGE_CHANGED
- android.intent.action.PACKAGE_DATA_CLEARED
- android.intent.action.PACKAGE_FIRST_LAUNCH
- android.intent.action.PACKAGE_FULLY_REMOVED
- android.intent.action.PACKAGE_INSTALL

- android.bluetooth.device.action.ACL_DISCONNECT_REQUESTED
- android.bluetooth.device.action.BOND_STATE_CHANGED
- android.bluetooth.device.action.CLASS_CHANGED
- android.bluetooth.device.action.FOUND
- android.bluetooth.device.action.NAME_CHANGED
- android.bluetooth.device.action.UUID
- android.bluetooth.devicepicker.action.DEVICE_SELECTED
- android.bluetooth.devicepicker.action.LAUNCH
- android.bluetooth.headset.action.VENDOR_SPECIFIC_HEADSET_EVENT
- android.bluetooth.headset.profile.action.AUDIO_STATE_CHANGED
- android.bluetooth.headset.profile.action.CONNECTION_STATE_CHANGED
- android.bluetooth.input.profile.action.CONNECTION_STATE_CHANGED
- android.bluetooth.pan.profile.action.CONNECTION_STATE_CHANGED
- android.hardware.action.NEW_PICTURE
- android.hardware.action.NEW_VIDEO
- android.hardware.input.action.QUERY_KEYBOARD_LAYOUTS
- android.intent.action.ACTION_POWER_CONNECTED
- android.intent.action.ACTION_POWER_DISCONNECTED
- android.intent.action.ACTION_SHUTDOWN

- android.intent.action.PROXY_CHANGE

- android.intent.action.REBOOT

- android.intent.action.SCREEN_OFF

- android.intent.action.SCREEN_ON

- android.intent.action.TIMEZONE_CHANGED

- android.intent.action.TIME_SET

- android.intent.action.TIME_TICK

- android.intent.action.UID_REMOVED

- android.intent.action.USER_PRESENT

- android.intent.action.WALLPAPER_CHANGED

- android.media.ACTION_SCO_AUDIO_STATE_UPDATED

- android.media.AUDIO_BECOMING_NOISY

- android.media.RINGER_MODE_CHANGED

- android.media.SCO_AUDIO_STATE_CHANGED

- android.media.VIBRATE_SETTING_CHANGED

- android.media.action.CLOSE_AUDIO_EFFECT_CONTROL_SESSION

- android.media.action.OPEN_AUDIO_EFFECT_CONTROL_SESSION

- android.net.conn.BACKGROUND_DATA_SETTING_CHANGED

- android.net.nsd.STATE_CHANGED

- android.intent.action.PACKAGE_NEEDS_VERIFICATION
- android.intent.action.PACKAGE_REMOVED
- android.intent.action.PACKAGE_REPLACED
- android.intent.action.PACKAGE_RESTARTED
- android.intent.action.PACKAGE_VERIFIED
- android.intent.action.PHONE_STATE
- android.intent.action.PROVIDER_CHANGED
- android.intent.action.BATTERY_LOW
- android.intent.action.BATTERY_OKAY
- android.intent.action.BOOT_COMPLETED
- android.intent.action.CAMERA_BUTTON
- android.intent.action.CONFIGURATION_CHANGED
- android.intent.action.DATE_CHANGED
- android.intent.action.DEVICE_STORAGE_LOW
- android.intent.action.DEVICE_STORAGE_OK
- android.intent.action.DOCK_EVENT
- android.intent.action.DREAMING_STARTED
- android.intent.action.DREAMING_STOPPED
- android.intent.action.EXTERNAL_APPLICATIONS_AVAILABLE

- android.net.wifi.WIFI_STATE_CHANGED
- android.net.wifi.p2p.CONNECTION_STATE_CHANGE
- android.net.wifi.p2p.DISCOVERY_STATE_CHANGE
- android.net.wifi.p2p.PEERS_CHANGED
- android.net.wifi.p2p.STATE_CHANGED
- android.net.wifi.p2p.THIS_DEVICE_CHANGED
- android.net.wifi.supplicant.CONNECTION_CHANGE
- android.net.wifi.supplicant.STATE_CHANGE
- android.speech.tts.TTS_QUEUE_PROCESSING_COMPLETED
- android.speech.tts.engine.TTS_DATA_INSTALLED
- android.net.wifi.NETWORK_IDS_CHANGED
- android.net.wifi.RSSI_CHANGED
- android.net.wifi.SCAN_RESULTS
- android.net.wifi.STATE_CHANGE
- android.intent.action.EXTERNAL_APPLICATIONS_UNAVAILABLE
- android.intent.action.FETCH_VOICEMAIL
- android.intent.action.GTALK_CONNECTED
- android.intent.action.GTALK_DISCONNECTED
- android.intent.action.AIRPLANE_MODE

- android.intent.action.MANAGE_PACKAGE_STORAGE

- android.intent.action.MEDIA_BAD_REMOVAL

- android.intent.action.MEDIA_BUTTON

- android.intent.action.MEDIA_CHECKING

- android.intent.action.HEADSET_PLUG

- android.intent.action.INPUT_METHOD_CHANGED

- android.intent.action.LOCALE_CHANGED

- android.intent.action.BATTERY_CHANGED