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Addendum

The Android team is constantly improving and updating the Android platform and other tools. As a result, some of the instructions we provide in the book are no longer correct. This addendum addresses all of the breaking changes we currently know about.

Camera Storage Permission

On devices running Android 10 or higher, a permission is required to allow apps that access the camera to save images. The CriminalIntent app does not include this permission, so if you attempt to take a picture on such a device the app will crash and you will see a stack trace like this one in Logcat:

Figure 1.1 Camera stack trace

```

--- beginning of crash
2019-10-01 15:59:31.725 7957-7957/? E/AndroidRuntime: FATAL EXCEPTION: main
Process: com.android.camera2, PID: 7957
java.lang.RuntimeException: Unable to start activity ComponentInfo{com.android.camera2/com.android.camera.CaptureActivity}: java.lang.NullPointerException: Attempt to get length of null array
    at android.app.ActivityThread.performLaunchActivity(ActivityThread.java:3270)
    at android.app.ActivityThread.handleLaunchActivity(ActivityThread.java:3409)
    at android.app.servertransaction.LaunchActivityItem.execute(LaunchActivityItem.java:83)
    at android.app.servertransaction.TransactionExecutor.executeCallbacks(TransactionExecutor.java:135)
    at android.app.servertransaction.TransactionExecutor.execute(TransactionExecutor.java:95)
    at android.app.ActivityThread$H.handleMessage(ActivityThread.java:2016)
    at android.os.Handler.dispatchMessage(Handler.java:107)
    at android.os.Looper.loop(Looper.java:214)
    at android.app.ActivityThread.main(ActivityThread.java:7356) <1 internal call>
    at com.android.internal.os.RuntimeInit$MethodAndArgsCaller.run(RuntimeInit.java:492)
    at com.android.internal.os.ZygoteInit.main(ZygoteInit.java:930)
Caused by: java.lang.NullPointerException: Attempt to get length of null array
    at com.android.camera.CameraActivity.shouldDisplayLocation(CameraActivity.java:1753)
    at com.android.camera.CameraActivity.onCreateTasks(CameraActivity.java:1438)
    at com.android.camera.util.QuickActivity.onCreate(QuickActivity.java:114)
    at android.app.Activity.performCreate(Activity.java:7867)
    at android.app.Activity.performCreate(Activity.java:7793)
    at android.app.Instrumentation.callActivityOnCreate(Instrumentation.java:1299)
    at android.app.ActivityThread.performLaunchActivity(ActivityThread.java:3245) <8 more...> <1 internal call> <2 more...>

```

To fix this issue, in Listing 16.4 in Chapter 16: Taking Pictures with Intents, add the `WRITE_EXTERNAL_STORAGE` permission to `AndroidManifest.xml`:

Listing 1.1 Adding storage permission and **FileProvider** declaration (manifests/`AndroidManifest.xml`)

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.bignerdranch.android.criminalintent">

    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>

    <application
        android:name=".CriminalIntentApplication"
        ...>
        ...
        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="com.bignerdranch.android.criminalintent.fileprovider"
            android:exported="false"
            android:grantUriPermissions="true">
        </provider>
    </application>

</manifest>

```

With this permission in place, you should be able to run the app and take a picture for your crime when directed in the chapter.

Additional Errata

Keep an eye on the errata forum post for additional information:

<https://forums.bignerdranch.com/t/4th-edition-errata/16817>

If you come across any other issues or are stuck, there is a community of people on the forums ready to help.