

CSE 162 Mobile Computing
Midterm Exam 1

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True/False (2 pts each)

1. Android apps must be digitally signed in order to run. F
2. Activities in Android are always destroyed when the user presses the **Home** button. F
3. Services in Android always have a user interface. F
4. A thin client app does most computation on the phone itself. F
5. The `onPause()` method should contain CPU-intensive shutdown operations. F
6. Different screen densities are managed by placing images in `res/drawable-* dpi` folders. F
7. Implicit Intents specify the exact component (class) to start. F
8. A Toast message requires explicit user interaction to dismiss. F

Multiple Choice (2 pts each)

1. Which file in an Android project serves as the “table of contents” for all components? (a) `MainActivity.java` (b) `AndroidManifest.xml` (c) `activity_main.xml` (d) `build.gradle`
2. Which Android component is best for running background music playback? (a) Activity (b) Service (c) BroadcastReceiver (d) Intent
3. Which callback is invoked when an Activity first enters the foreground? (a) `onCreate()` (b) `onStart()` (c) `onResume()` (d) `onDestroy()`
4. Which of the following is **not** a benefit of designing UIs in XML? (a) Easier refactoring (b) Separation of logic and presentation (c) Code readability only (d) Tree-like structure matches UI
5. Which Intent type is used to open the phone’s camera app from another app? (a) Explicit Intent (b) Implicit Intent (c) Pending Intent (d) Sticky Intent
6. Which of the following is **true** of ArrayAdapter? (a) They adapt database cursors to views (b) They adapt arrays/lists into simple TextView layouts (c) They adapt XML layouts into services (d) They adapt broadcast messages into widgets

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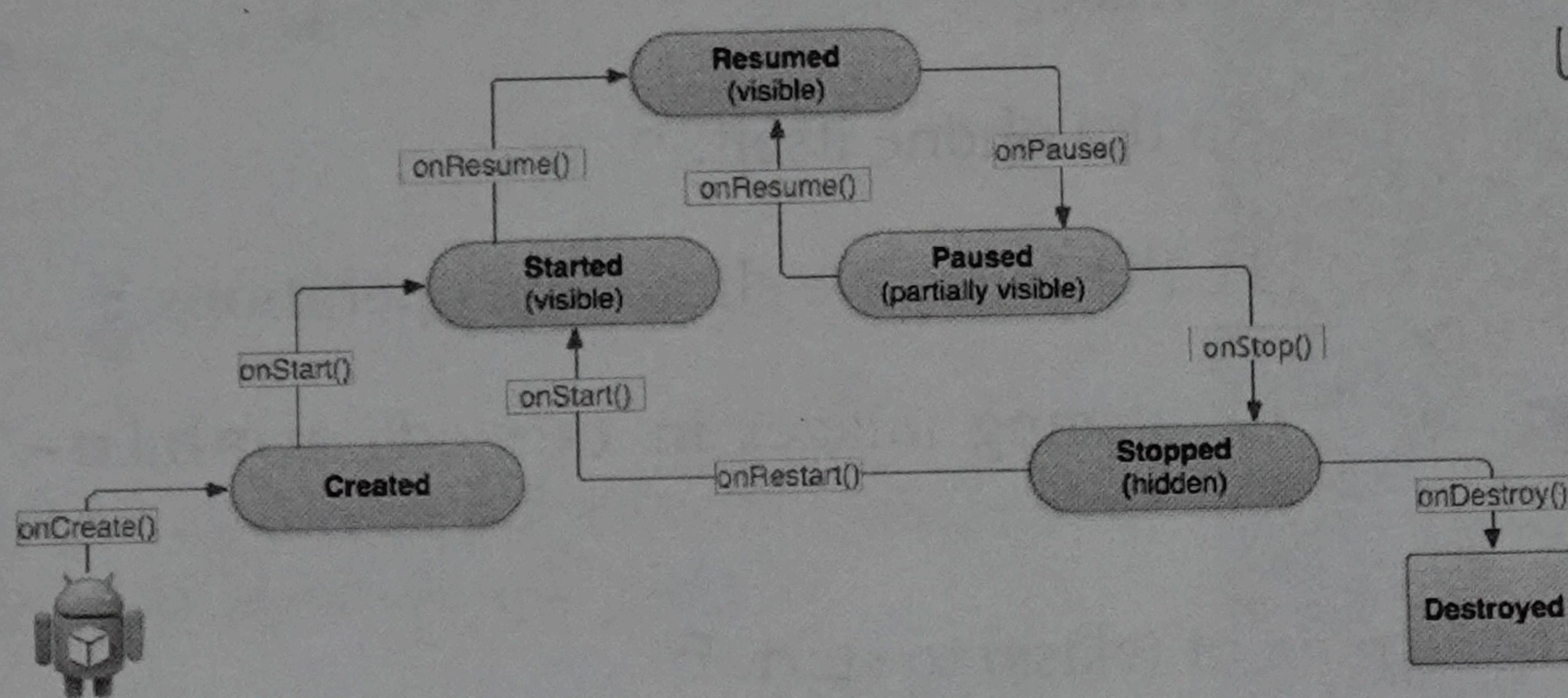
- 7 Which is a limitation of wireless networks for mobile apps? (a) Infinite bandwidth (b)
Frequent disconnections (c) Unlimited battery (d) Uniform devices

8. The CATEGORY_DEFAULT in an intent filter allows: (a) Apps to auto-install on the launcher
(b) Apps to be invoked via implicit intents (c) Apps to bypass permissions (d) Apps to load faster

Short Answer (5 pts each)

Answer briefly in 2-4 sentences.

1. Describe the sequence of lifecycle callbacks when: (a) The user launches your app from the launcher. (b) The user presses the Back button to exit.



2. In Android Programming, explain the benefit of separating the **presentation tier** design from the **logic tier** design.

0 X

Presentation with XML is better than using only Java for both logic and presentation because XML is better at displaying the same content on different devices.

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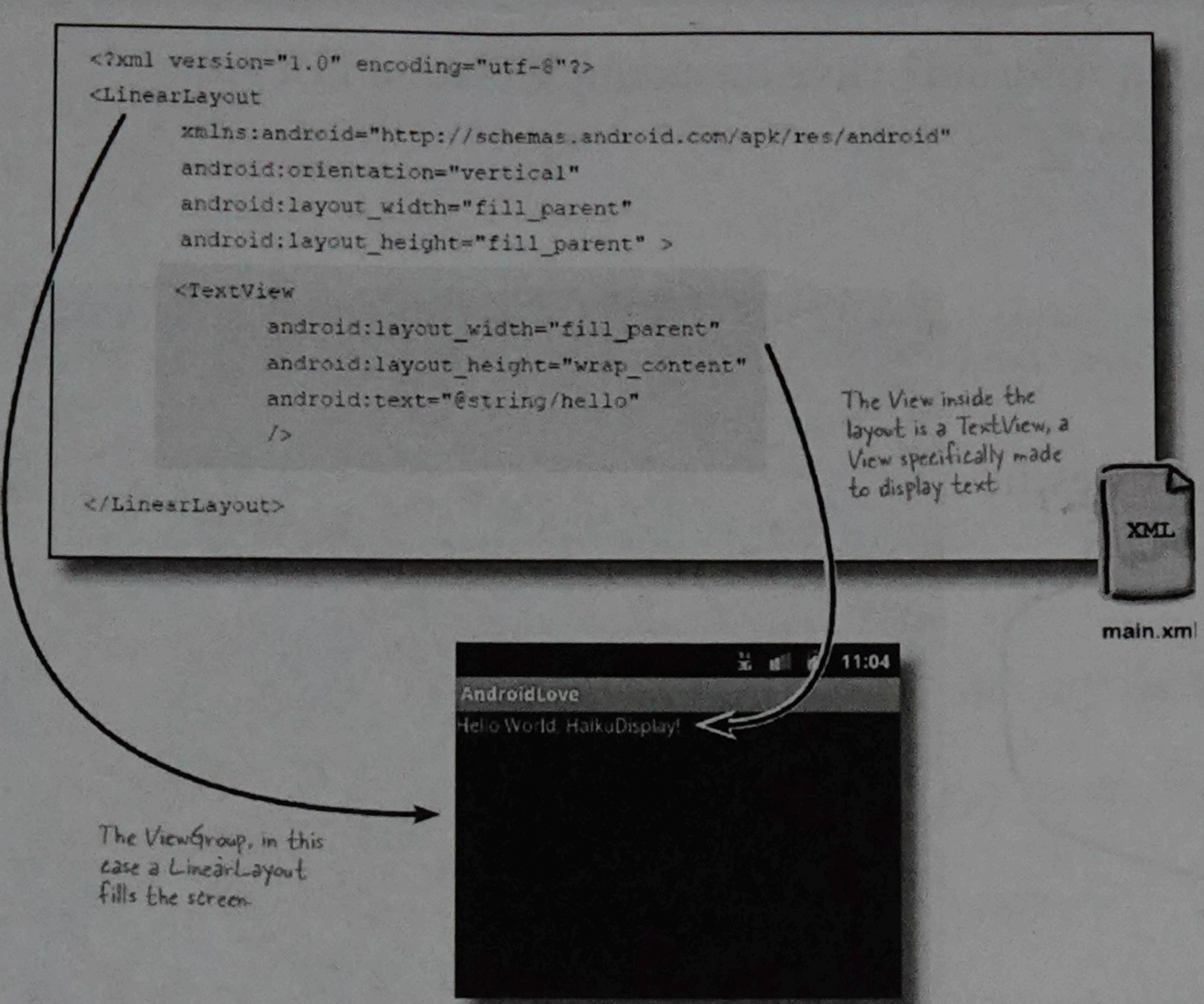
3. Should we perform relatively CPU-intensive shutdown operations in the `onStop()` function? Why?

Yes, because we are stopping our whole application. Thus, we are stopping all services before we destroy the application. We can also restart and then start if we are not working to rebuild the app.

Q

4. In the code segment below, explain the meaning of `wrap_content` and `fill_parent` used in the layout attributes.

Wrap content and fill parent are used to match the device being used dimensions and not have anything like text boxes exceed those dimensions.



5. Why should we use **strings.xml** and **dimens.xml** instead of hardcoding values in Java?

(5) Allows us to separate logic and UI. XML is better for different devices and more adaptable. The same texts, images, displays, etc. will be tailored for a specific device and not look the same among diff. devices.

6. Define **Explicit** vs **Implicit** intents. Provide an example of each.

(5) Explicit is making an intent be used for only one specified task. Implicit is an intent that can be used for different tasks.

7. Describe two challenges in **mobile HCI** design and one strategy to mitigate each.

Human Computing Interaction

1) User is told battery is low but has to write "ok" to dismiss, but they don't and message stays
 Sol: make a button to display message

2) User presses on ³ a button and the screen switches to another activity but no back functionality

Sol: creating a back button or so user doesn't have to restart app

→ adding back feature

2.5

8. What is the role of an **Adapter** in Android? Give an example with a ListView.
It helps with formatting how the app is seen.

Long Answer

Android Manifest file (5p each)

1. List the names of all activities and services, in this app.

4.5

- Telecine Activity
- Telecine Shortcut Configure Activity
- Telecine Shortcut Launch Activity
- Telecine Tile Service ?

- 9
2. Which activity will be launched if the user click the app icon? How do you know?

Line 12, the LAUNCHER

line calls the app

because it is calling
for the app to be
launched

3. Which activities and services can respond to an intent with a name of VIEW?

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- Telecine Shortcut Configure Activity
- Telecine Shortcut Launch Activity

```
<?xml version='1.0' encoding='utf-8'?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="com.jakewharton.telecine">
    <application
        android:label="@string/launcher_name"
        android:name=".TelecineApplication"
        android:supportRtl="true">
        <activity android:name=".TelecineActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN"/>
                <category android:name="android.intent.category.LAUNCHER"/>
                <category android:name="android.intent.category.DEFAULT"/>
                <action android:name="android.intent.action.SEND"/>
            </intent-filter>
        </activity>
        <activity
            android:name=".TelecineShortcutConfigureActivity"
            android:excludeFromRecents="true">
            <intent-filter>
                <action android:name="android.intent.action.CREATE_SHORTCUT" />
                <action android:name="android.intent.action.VIEW" />
            </intent-filter>
        </activity>
        <activity
            android:name=".TelecineShortcutLaunchActivity"
            android:theme="@style/Theme.Telecine.Transparent">
            <intent-filter android:autoVerify="true">
                <action android:name="android.intent.action.VIEW" />
                <data android:host="www.kickstarter.com" />
            </intent-filter>
        </activity>
        <service
            android:name=".TelecineTileService"
            android:permission="android.permission.BIND_QUICK_SETTINGS_TILE">
            <intent-filter>
                <action android:name="android.service.quicksettings.action.OS_TILE" />
                <action android:name="android.intent.action.SEND" />
            </intent-filter>
        </service>
    </application>
</manifest>
```

Figure 1: Android Manifest file