



Permissions

Programming the Android Platform

Permission Architecture

- Applications can protect resources & data with permissions
- Applications statically declare permissions
 - Required of components interacting with them
 - Required by components they interact with
- Android requires users for consent to specific permissions when application is installed

Defining Permissions

- Applications can define permissions in an AndroidManifest.xml file

```
<!-- Allows access to the vibrator -->
```

```
<permission android:name="android.permission.VIBRATE"
```

```
...
```

```
/>
```

Requiring Application Permissions

- Applications can require components interacting with them to have a specified permission by setting `android:permission` attribute in `AndroidManifest.xml`
- By default, permissions apply to all components hosted by the application

Requiring Application Perms (cont.)

- AndroidManifest.xml

```
<manifest>
```

```
...
```

```
  android:permission="android.permission.VIBRATE" ...>
```

```
  <application
```

```
    ...
```

```
  </application>
```

```
</manifest>
```

Component Permissions

- Individual components can set their own permissions
 - These override application-level permissions

Activity Permissions

- Restricts which components can start the associated activity
- Checked within execution of
 - `startActivity()`
 - `startActivityForResult()`
- Throws `SecurityException` on permissions failure

Service Permissions

- Restricts which components can start or bind to the associated service
- Checked within execution of
 - `Context.startService()`
 - `Context.stopService()`
 - `Context.bindService()`
- Throws `SecurityException` on permissions failure

BroadcastReceiver Permissions

- Restricts which components can send broadcasts to the BroadcastReceiver
- Checked after Context.sendBroadcast() returns
- Does **not** throw SecurityException on permissions failure

ContentProvider Permissions

- Restricts which components can read & write the data in a ContentProvider
- Will discuss in more detail later, when we cover ContentProviders

Declaring Permissions

- Applications specify permissions they use

```
<manifest ... >
```

```
...
```

```
<uses-permission
```

```
  android:name="android.permission.VIBRATE">
```

```
</uses-permission>
```

```
...
```

```
</manifest >
```

- User must accept permissions before the package can be installed

Permissions-related Methods

- Can a calling process access a Service?
 - `Context.checkCallingPermission()`
- Does a given processes have specific permissions?
 - `Context.checkPermission(String, int, int)`
- Does a given application have specific permissions?
 - `PackageManager.checkPermission(String, String)`
- Others to be discussed in later lectures