Programming Handheld Systems

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Permissions
Today’s Topics

Android permissions
Defining & using application permissions
Component permissions & permissions-related APIs
Permissions

Android protects resources & data with permissions

Used to limit access to:

User information – e.g., contacts
Cost-sensitive API’s – e.g., SMS/MMS
System resources – e.g., Camera
Permissions

Permissions are represented as strings

In AndroidManifest.xml, apps declare the permissions

They use themselves

They require of other components
Using Permissions

Applications specify permissions they use through a `<uses-permission>` tag.

Users must accept these permissions before an application can be installed.
Using Permissions

<manifest ...
...
<uses-permission android:name="android.permission.CAMERA"/>
<uses-permission android:name="android.permission.INTERNET"/>
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
...
</manifest>

MapLocationFromContacts

Select a contact from contacts database

Display a map centered on selected contact’s address
Defining Permissions

Apps can also define and enforce their own permissions
Defining Permissions

Suppose your application performs a privileged/dangerous operation.
You might not want to allow just any application to invoke yours.
So you can define & enforce your own permission.
PermissionExampleBoom

Simple Application that performs a (just pretend) dangerous action
Define & Enforcing Permissions

If you don’t want just anyone to run PermissionExampleBoom
Define & enforce an application-specific permission
Using the new Permission

Apps that want to use PermissionExampleBoom must now acquire the correct permission
**Uses-Permission**

An application can declare/accept the permissions of the Applications it uses.
**Component Permissions**

*Individual components can set their own permissions, restricting which other components can access them.*

*Component permissions take precedence over 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 & receive broadcasts

Permissions checked in multiple places

More on this when we discuss BroadcastReceivers
ContentProvider Permissions

Restrict which components can read & write the data in a ContentProvider

More on this when we discuss ContentProviders
Next time

The Fragment Class