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PROGRAMMING HANDHELD SYSTEMS

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THE INTENT CLASS

The Intent Class

Starting Activities with Intents

Explicit Activation Implicit Activation via Intent resolution

a data structure that represents

An operation to be performed, or An event that has occurred

Using Intents to specify operations to be performed, not for event notification

i.e., Intents used to start a single activity

We’ll cover using intents for event notification when we talk about BroadcastReceivers

Intents provide a flexible language for specifying operations to be performed

e.g., Pick a contact, take a photo, dial a phone number

Intent is constructed by one component that wants some work done

Received by one activity that can perform that work

Action Data Category Type Component Extras Flags

String representing desired operation

ACTION\_DIAL – Dial a number

ACTION\_EDIT – Display data to edit

ACTION\_SYNC – Synchronize device data with server

ACTION\_MAIN – Start as initial activity of app

Intent newInt = new

Intent(Intent.ACTION\_DIAL);

Or Intent newInt = new Intent(); newInt.setAction(Intent.ACTION\_DIAL);

Data associated with the Intent Formatted as a Uniform Resource Identifier (URI)

Data to view on a map

Uri.parse(“geo:0,0?

q=1600+Pennsylvania+ Ave+Washington+DC”)

Number to dial in the phone dialer

Uri.parse(“tel:+15555555555”)

Intent newInt = new Intent (

Intent.ACTION\_DIAL, Uri.parse("tel:+15555555555"));

Or Intent newInt =

new Intent(Intent.ACTION\_DIAL); newInt.setData(

Uri.parse("tel:+15555555555"));

Additional information about the components that can handle the intent

Category\_browsable – can be invoked by a browser to display data ref’s by a URI

Category\_launcher – can be the initial activity of a task & is listed in top-level app launcher

Specifies the MIME type of the Intent data

image/\*, image/png, image/jpeg

text/html, text/plain

If unspecified, Android will infer the type

Intent.setType(String type)

Or

Intent.setDataAndType(Uri data,

String type)

The component that should receive this intent

Use this when there’s exactly one component that should receive the intent

Intent newInt = Intent(

Context packageContext, Class<?> cls);

Or

Intent newInt = new Intent ();

and one of:

setComponent(), setClass(), or setClassName()

Add’l information associated with Intent

Treated as a map (key-value pairs)

Intent.EXTRA\_EMAIL: email recipients

Intent newInt = new Intent(Intent.ACTION\_SEND);

newInt.putExtra(android.content.Intent.EXTRA\_EMAIL,

new String[]{

“aporter@cs.umd.edu”, “ceo@microsoft.com”, “potus@whitehouse.gov”,“mozart@musician.org” } );

Several forms depending on data type putExtra(String name, String value); putExtra(String name, float[] value); ...

Specify how Intent should be handled

FLAG\_ACTIVITY\_NO\_HISTORY

Don’t put this Activity in the History stack

FLAG\_DEBUG\_LOG\_RESOLUTION

Print extra logging information when this Intent is processed

Intent newInt =

new Intent(Intent.ACTION\_SEND); newInt.setFlags(

Intent.FLAG\_ACTIVITY\_NO\_HISTORY);

startActivity(Intent intent,...)

startActivityForResult(Intent intent, ...)

Can be named explicitly by setting the intent’s component

Can be determined implicitly

HelloWorldWithLogin

two Activities

LoginActivity checks username & password and then starts HelloAndroidActivity HelloAndroidActivity shows “hello Android” message

22:42

Android

Hell*o* Android with Login

UserName

adam

Password

Login

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3199

HelloWorldWithLogin

When the Activity to be activated is not explicitly named, Android tries to find Activities that match the Intent

This process is called intent resolution

An Intent describing a desired operation

IntentFilters which describe which operations an Activity can handle

Specified either in AndroidManifest.xml or programmatically

Action

Data (both URI & TYPE)

Category

<activity ...>

<intent-filter ...>

... <action android:name=”actionName" /> ... </intent-filter> ... </activity>

<activity ...>

<intent-filter ...>

... <action android:name=

”android.intent.action.DIAL" /> ... </intent-filter> ... </activity>

<intent-filter ...> ... <data android:mimeType="string" android:scheme="string" android:host="string" android:port="string" android:path="string" android:pathPattern="string" android:pathPrefix="string" /> ... </intent-filter>

See: http://developer.android.com/guide/

components/intents-filters.html

<intent-filter ...>

... <data android:scheme=”geo" /> ... </intent-filter>

<intent-filter ...>

... <category android:name="string" /> ... </intent-filter>

EXAMPLE: MAPS APPLICATION

<intent-filter ...>

<action android:name =

"android.intent.action.VIEW" /> <category android:name =

"android.intent.category.DEFAULT" /> <category android:name=

"android.intent.category.BROWSABLE”/> <data android:scheme = "geo”/> </intent-filter>

Note: to receive implicit intents an Activity should specify an IntentFilter with the category

"android.intent.category.DEFAULT”

android:priority – Priority given to the parent component when handling matching Intents Causes Android to prefer one activity over another Value should be greater than -1000 & less than 1000 Higher values represent higher priorities

% adb shell dumpsys package

% adb shell dumpsys package

Permissions