Intents, Intent Filters, and Invoking Activities: Part III: Using Tabs

Originals of Slides and Source Code for Examples: http://www.coreservlets.com/android-tutorial/

For live Android training, please see courses at http://courses.coreservlets.com/.

Taught by the author of Core Servlets and JSP, More Servlets and JSP, and this Android tutorial. Available at public venues, or customized versions can be held on-site at your organization.

• Courses developed and taught by Marty Hall
  – JSF 2, PrimeFaces, Servlets/JSP, Ajax, jQuery, Android development, Java 6 or 7 programming, custom mix of topics
  – Ajax courses can concentrate on 1 library (jQuery, Prototype/Scriptaculous, Ext-JS, Dojo, etc.) or survey several
• Courses developed and taught by coreservlets.com experts (edited by Marty)
  – Spring, Hibernate/JPA, EJB3, GWT, Hadoop, SOAP-based and RESTful Web Services
Contact hall@coreservlets.com for details
Topics in This Section

• Part I
  – Invoking Activities by class name
  – Defining dimensions in res/values
  – Sending data via the “extras” Bundle

• Part II
  – Invoking Activities with a URI
  – Sending data via parameters in the URI

• Part III
  – Invoking Activities with tabbed windows
  – Defining two-image icons in res/drawable

Customized Java EE Training: http://courses.coreservlets.com/
Java, JSF 2, PrimeFaces, Servlets, JSP, Ajax, jQuery, Spring, Hibernate, RESTful Web Services, Hadoop, Android.
Developed and taught by well-known author and developer. At public venues or onsite at your location.
Summary of Options

• **Invoke Activity by class name (Part I)**
  – Exactly one Activity can match
  – New Activity must be in same project as original
  – Can send data via an “extras” Bundle

• **Invoke Activity by URI (Part II)**
  – More than one Activity could match
  – New Activity need not be in the same project as original
  – Can send data via URI parameters or “extras” Bundle

• **Switch Activities via tabs (Part III)**
  – Can use class name or URI to specify Activity
  – New Activity must be in same project as original
  – Can send data via URI parameters or “extras” Bundle
Summary

• Idea
  – Make tabbed windows. Each tab invokes a different Activity, or an Activity with different data.
    • Can use either specific-class approach or URI approach
    • Can send data either with an extras Bundle or in URI
    • Tab window Activity and new Activities must be in same project
      – Due to security reasons

• Syntax
  – Java
    • Extends TabActivity. Uses TabHost and TabSpec
      – Details on next slide
    – XML (AndroidManifest.xml)
      • Same as shown earlier

Using TabActivity: Outline

```java
public class SomeActivity extends TabActivity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        Resources resources = getResources();
        TabHost host = getTabHost();
        Intent intent1 = ...;
        Drawable tabIcon = resources.getDrawable(R.drawable.icon_name);
        TabSpec tab1Spec = host.newTabSpec("Tab One")
            .setIndicator("Some Text", tabIcon)
            .setContent(intent1);
        host.addTab(tab1Spec);
        // Repeat for other tabs
    }
}
```

Note that the setter methods for TabSpec return the TabSpec so that you can do chained assignments.
Note also that there is no layout file when using this approach.
Defining Tab Icons

• **Idea**
  – Although it is legal to call setIndicator(someString), the resultant tab looks bad because of blank space at top. So, more common to do setIndicator(someString, someIcon).
  • You can also do setIndicator(someView) for fancy tabs

• **Icon option 1**
  – Use a single image for the icon
  • Same image used when the tab is or is not selected

• **Icon option 2**
  – Use 2 similar but differently colored images for the icon
  • One for when selected, one for when not

Option 1: A Single Image

• **Pros**
  – Simpler
  – Text color and background color of the tab already change on selection, so not confusing if icon stays same.

• **Cons**
  – Doesn’t look quite as good as with two images

• **Approach**
  – Put image file in res/drawable/some_icon.png
  – Refer to image with
  • Drawable tabIcon = resources.getDrawable(R.drawable.some_icon);
  – Put icon in tab label with
  • tabSpec.setIndicator("Some Text", tabIcon);
Option 2: Two Images (Normal and Selected)

- **Pros**
  - Looks better

- **Cons**
  - More work

- **Approach**
  - Put image files in
    - res/drawable/some_icon_normal.png and
    - res/drawable/some_icon_selected.png
  - Make XML file (next page)
    - res/drawable/some_icon.xml
  - Refer to XML file with
    - Drawable tabIcon =
      resources.getDrawable(R.drawable.some_icon);
  - Put icon in tab label with
    - tabSpec.setIndicator("Some Text", tabIcon);

---

XML Code for Dual-Image Icon

```xml
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://...">
  <!-- When tab selected, use some_icon_selected.png -->
  <item android:drawable="@drawable/some_icon_selected"
       android:state_selected="true" />
  <!-- When tab not selected, use some_icon_normal.png -->
  <item android:drawable="@drawable/some_icon_normal" />
</selector>
```

The file names of the two images are arbitrary. They need not end in _selected and _normal, although this can be a useful convention so that you know what the images are for.
Example: Invoking Loan Calculator (Each Tab Sends Different Data)

Customized Java EE Training: http://courses.coreservlets.com/
Java, JSF 2, PrimeFaces, Servlets, JSP, Ajax, jQuery, Spring, Hibernate, RESTful Web Services, Hadoop, Android. Developed and taught by well-known author and developer. At public venues or onsite at your location.

Example: Overview

- **Initial Activity**
  - Has tabs that, when pressed, invoke the loan calculator with different data
    - Activity specified either with class name or URI
      - But either way, initial Activity must be in same project as new one
    - Data sent via either in extras Bundle or in URI

- **Approach**
  - Intents and data created in same way as before
  - Intent associated with tab via tabHost.setContent
  - Put entry for LoanCalculatorActivity in manifest
    - Same as shown previously
XML: Icon File
(res/drawable/calculator.xml)

```xml
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <!-- Calculator images from http://www.fatcow.com/free-icons -->
    <!-- When selected, use white -->
    <item android:drawable="@drawable/calculator_white"
         android:state_selected="true"/>
    <!-- When not selected, use black-->
    <item android:drawable="@drawable/calculator_black"/>
</selector>
```

XML: Manifest File
Action Declaration

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.coreservlets.intentfilter1"
    android:versionCode="1"
    android:versionName="1.0">
    <uses-sdk android:minSdkVersion="8" />  
    <application android:icon="@drawable/icon"
                 android:label="@string/app_name">
        ... <!-- Declaration for IntentFilter1Activity shown earlier -->
        <activity android:name=".LoanCalculatorActivity"
                  android:label="@string/loan_calculator_app_name">
            <intent-filter>
                <action android:name="android.intent.action.VIEW" />
                <category android:name="android.intent.category.DEFAULT" />
                <data android:scheme="loan" android:host="coreservlets.com" />
            </intent-filter>
        </activity>
        ...
    </application>
</manifest>
```

Unchanged from previous examples.
public class TabbedActivity extends TabActivity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        Resources resources =(getResources());
        TabHost host = getTabHost();
        Intent intent1 =
            new Intent(this, LoanCalculatorActivity.class);
        Bundle loanBundle1 =
            LoanBundler.makeLoanInfoBundle(100000, 7.5, 120);
        intent1.putExtras(loanBundle1);
        Drawable tabIcon =
            resources.getDrawable(R.drawable.calculator);
        TabSpec tab1Spec = host.newTabSpec("Tab One")
            .setIndicator("10 Year", tabIcon)
            .setContent(intent1);
        host.addTab(tab1Spec);
        Uri uriTwentyYear =
            Uri.parse("loan://coreservlets.com/calc");
        Intent intent2 =
            new Intent(Intent.ACTION_VIEW, uriTwentyYear);
        Bundle loanBundle2 =
            LoanBundler.makeLoanInfoBundle(100000, 7.5, 240);
        intent2.putExtras(loanBundle2);
        tabIcon = resources.getDrawable(R.drawable.calculator);
        TabSpec tab2Spec = host.newTabSpec("Tab Two")
            .setIndicator("20 Year", tabIcon)
            .setContent(intent2);
        host.addTab(tab2Spec);
String baseAddress = "loan://coreservlets.com/calc";
String address =
    String.format("%s%s%s%s",
                     baseAddress,
                     "loanAmount=100000",
                     "annualInterestRateInPercent=7.5",
                     "loanPeriodInMonths=360");

Uri uriThirtyYear = Uri.parse(address);
Intent intent3 =
    new Intent(Intent.ACTION_VIEW, uriThirtyYear);
tabIcon = resources.getDrawable(R.drawable.calculator);
TabSpec tab3Spec = host.newTabSpec("Tab Three")
    .setIndicator("30 Year", tabIcon)
    .setContent(intent3);

host.addTab(tab3Spec);

This second tab uses an Intent that specifies the Activity with a URI.
It sends data via parameters embedded in the URI.

Example: Results

<table>
<thead>
<tr>
<th>Tabbed Windows</th>
<th>9:58 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Year</td>
<td></td>
</tr>
<tr>
<td>Loan amount:</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Interest rate:</td>
<td>7.50%</td>
</tr>
<tr>
<td>Months:</td>
<td>120</td>
</tr>
<tr>
<td>Monthly payment:</td>
<td>$1,187.02</td>
</tr>
<tr>
<td>Total payments:</td>
<td>$142,442.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tabbed Windows</th>
<th>9:59 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Year</td>
<td></td>
</tr>
<tr>
<td>Loan amount:</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Interest rate:</td>
<td>7.50%</td>
</tr>
<tr>
<td>Months:</td>
<td>240</td>
</tr>
<tr>
<td>Monthly payment:</td>
<td>$805.59</td>
</tr>
<tr>
<td>Total payments:</td>
<td>$193,342.37</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tabbed Windows</th>
<th>9:59 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Year</td>
<td></td>
</tr>
<tr>
<td>Loan amount:</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>Interest rate:</td>
<td>7.50%</td>
</tr>
<tr>
<td>Months:</td>
<td>360</td>
</tr>
<tr>
<td>Monthly payment:</td>
<td>$699.21</td>
</tr>
<tr>
<td>Total payments:</td>
<td>$213,717.22</td>
</tr>
</tbody>
</table>
Wrap-Up

Summary

• Java (extends TabActivity)

```java
TabHost host = getTabHost();
Intent intent1= ...;  // Refers to Activity in same project
Drawable tabIcon = resources.getDrawable(R.drawable.some_icon);
TabSpec tab1Spec = host.newTabSpec("Tab One")
    .setIndicator("Some Text", tabIcon)
    .setContent(intent1);
host.addTab(tab1Spec);
// Repeat for other tabs
```

• Icon (res/drawable/some_icon.xml)

```xml
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://...">
    <item android:drawable="@drawable/some_icon_selected"
        android:state_selected="true" />
    <item android:drawable="@drawable/some_icon_normal" />
</selector>
```