EMBEDDED SYSTEMS PROGRAMMING 2014-15

Application Tip: Switching UIs

THE PROBLEM

- **How to switch from one UI to another**

- Each UI is associated with a distinct class that controls it

- Solution shown: two UIs, hence two classes. A button in each UI triggers the switch to the other UI
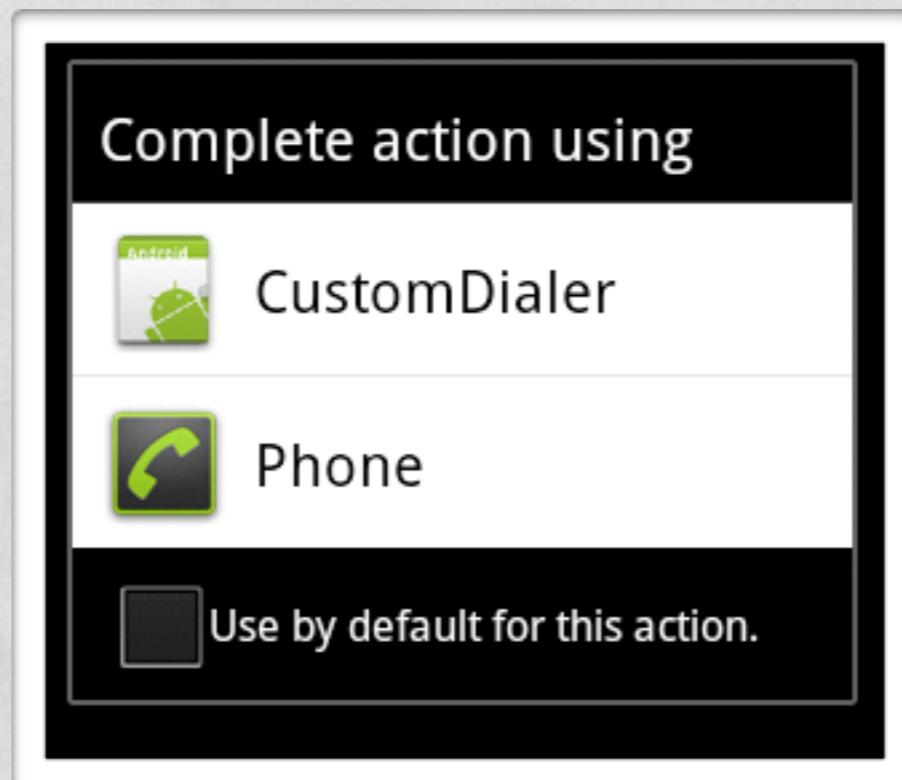
THE TIP

- Two classes derived from `Activity`

- The UIs associated with the classes are defined declaratively, hence there are two XML layout files

- The two classes invoke each other via **intents**

INTENTS (1/3)

- Intent: **abstract request for an action to be performed**

- **Explicit** intent: requires an exact component (e.g., a class) to perform the operation

- **Implicit** intent: does not specify a class, but includes enough information for the system to determine which of the available components is to be invoked (**intent resolution**)

INTENTS (2/3)

- The intent resolution process may find more than one suitable component: in this case, the final choice is up to the user

Action requested: dial a phone call

INTENTS (3/3)

- Intents have a flexible (and complex) syntax; http://developer.android.com/guide/components/intents-filters.html provides full details

- To invoke a specific component (such as an activity), simply build an intent specifying
  - a **context** of the application package implementing the component,
  - the **component class**

CODE (1/6)

- Source files:

  - **`Activity1.java`**,

  - **`Activity2.java`**

- Layouts:

  - **`main.xml`** (associated with Activity1),

  - **`main2.xml`** (associated with Activity2)
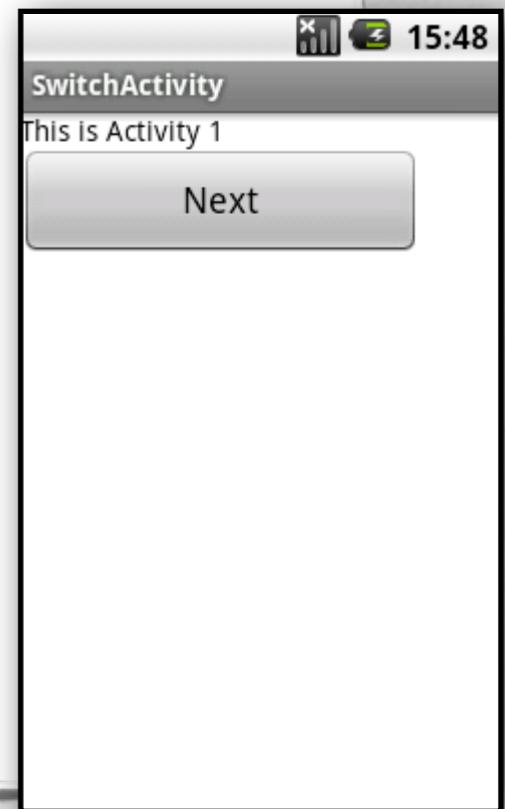
- main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:background="#ffffff"  >

    <TextView android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:textColor="#000000"
            android:text="This is Activity 1" />

    <Button android:text="Next"
            android:id="@+id/Button01"
            android:layout_width="200px"
            android:textSize="18px"
            android:layout_height="55px">
    </Button>

</LinearLayout>
```
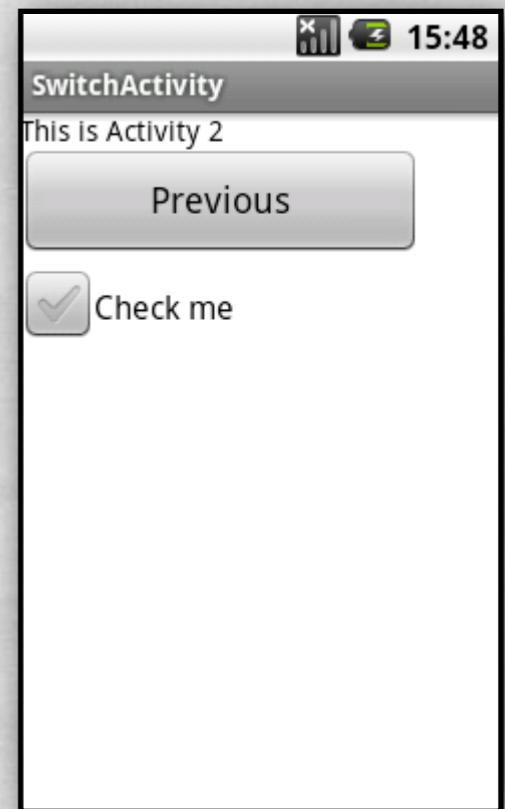
CODE (3/6)

- main2.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:background="#ffffff"  >

    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:textColor="#000000"
        android:text="This is Activity 2"
    />

    <Button
        android:id="@+id/Button02"
        android:layout_width="200px"
        android:layout_height="55px"
        android:text="Previous"
        android:textSize="18px">
    </Button>

    <CheckBox
        android:id="@+id/plain_cb"
        android:layout_width="200px"
        android:layout_height="wrap_content"
        android:text="Check me"
        android:textColor="#000000"
    />

</LinearLayout>
```

- Activity1.java

```java
package it.unipd.dei.switchactivity;

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Activity1 extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);

        Button next = (Button) findViewById(R.id.Button01);
        next.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view) {
                Intent myIntent = new Intent(view.getContext(), Activity2.class);
                startActivityForResult(myIntent, 0);
            }

        });
    }
}
```

CODE (5/6)

- Activity2.java

```java
package it.unipd.dei.switchactivity;

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Activity2 extends Activity
{
    /** Called when the activity is first created. */
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main2);

        Button next = (Button) findViewById(R.id.Button02);
        next.setOnClickListener(new View.OnClickListener()
        {
            public void onClick(View view)
            {
                Intent intent = new Intent();
                setResult(RESULT_OK, intent);
                finish();
            }
        });
    }

}
```

CODE (6/6)

- Both activities should be declared in the `AndroidManifest.xml` file

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
      package="it.unipd.dei.switchactivity"
      android:versionCode="1"
      android:versionName="1.0">
    <uses-sdk android:minSdkVersion="8" />

    <application android:icon="@drawable/icon" android:label="@string/app_name">
        <activity android:name=".Activity1"
                    android:label="@string/app_name">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".Activity2"></activity>

    </application>
</manifest>
```