Android Resources and Intents

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CMPT166
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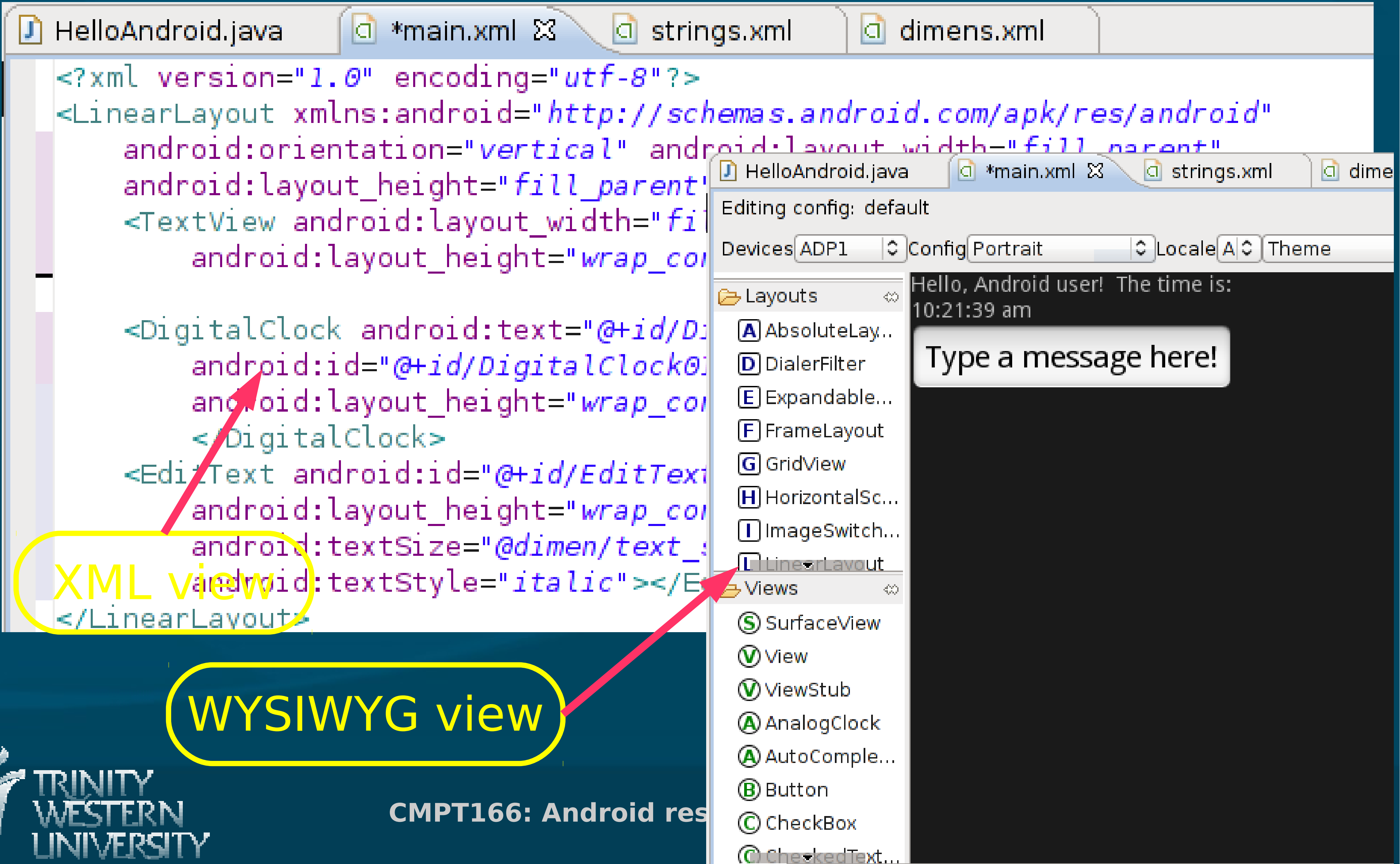
Outline for today

- Android resources
  - Layout: XML config, WYSIWYG editor
  - Text resources and internationalization
  - Drawable resources (images, animation)
  - Alternate versions of resources
- Event listeners
- Intents
  - AndroidManifest

XML layout

- Laying out widgets can be complex in code
- You may use an XML config file for layout:
  - Create a file under res/layout/*.xml
  - XML is like HTML: <tag> ... </tag>
- Specify layouts, widgets, font/colour/text/...
  - Eclipse ADT has a WYSIWYG layout editor!
- XML gets compiled into an object (R class)
  - R is auto-generated; don't edit directly!
  - Refer to R.layout.myLayout
    (follows name of the XML file)

Layout editor



```
<?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
    <TextView android:layout_width="fi
        android:layout_height="wrap_co

    <DigitalClock android:text="@+id/Di
        android:id="@+id/DigitalClock0
        android:layout_height="wrap_co
        </DigitalClock>
    <EditText android:id="@+id/EditText
        android:layout_height="wrap_co
        android:textSize="@dimen/text_
        android:textStyle="italic"></E
</LinearLayout>
```

Editing config: default

Devices ADP1 Config Portrait Locale A Theme

Hello, Android user! The time is:
10:21:39 am

Type a message here!

Referring to resources

- In the XML layout, the first TextView widget has a default ID: @+id/TextView01
  - @: resource ID (instead of literal value)
  - +: create this resource ID if it doesn't exist
- Change the widget's ID by editing Property/ID:
  - e.g., @+id/top_label
- Refer to this widget in the code using its ID:

  -
    ```
    final TextView label = (TextView)
                    findViewById( R.id.top_label );
    ```

  -
    ```
    label.setText( “This text was set by code!” );
    ```

Text resources and i18n

- "i18n": Internationalization: single software that can be deployed in many countries
- "L10n": Localization: adapting the software for local language, formats, etc.
- Put any localizable strings into another file
  - Dialogue text, labels, etc.
  - Default strings file: res/values/strings.xml
- String resources: name/value pairs
  - Refer to @string/name
  - Use a string resource as the text of a widget

Drawable resources

- Drawables include images, icons, animation sequences, etc.
- Store PNGs, etc. under drawable/ directory
- Refer to via @drawable/filename (w/o ext)
  - In properties: @drawable/filename
  - From code, use getResourceById() to get a reference to the object (cast as needed):
    - **getResourceById(R.drawable.filename);**
- All resources are packaged together with your compiled code:
one distributable application

Alternate resources

- Alternate resource directories may be used depending on the device's locale, screen res, supported hardware, etc.:
- res/values-fr/strings.xml: French strings
- res/drawable-hdpi/: high-pixel-density images
- Qualifiers: Cell network (MCC/MNC), language, region (en-CA), phys. screen size, orientation, pixel density, touchscreen type, etc.

Adding event listeners

- Buttons have OnClickListeners:

```
import android.view.View.OnClickListener;
import android.widget.Button;
```

  - (Resource ID need not match var name)

```
final Button clickMe = (Button)
    findViewById( R.id.clickMe );
```

  - Anon. inner class, anon object:

```
clkMe.setOnClickListener( new OnClickListener(){
    public void onClick( View v ) {
        // do stuff when button is clicked
    }
} );
```

Intents

- Activities (and Services, etc.) are triggered by Intents: system-wide messages/events
- The “glue” that connects together components
- An Intent may include:
  - Target: package and component (Activity)
  - Action: what the target should do
  - Data: URI and MIME type
  - Category: home, launcher, preference, etc.

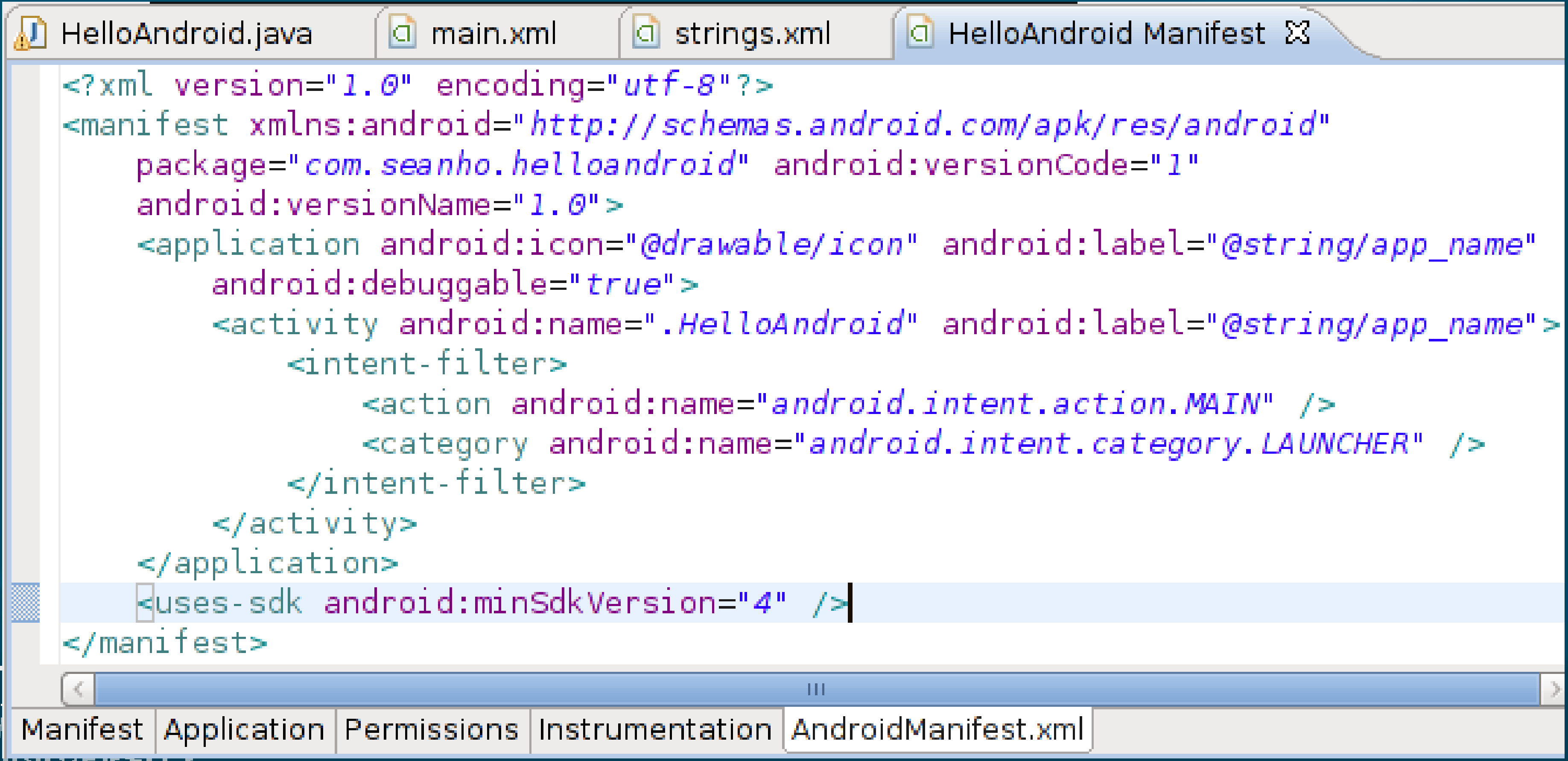
Implicit intents and filters

- An implicit intent does not specify a particular target component (Activity)
- Android matches action, data, and category against a component's intent filter to figure out if it should receive that intent
- e.g., to launch web browser:
  - Sets action and data:

```
Intent browse = new Intent( Intent.VIEW_ACTION,
    Uri.parse( “http://www.google.com/” ) );
startActivity( browse );
```

AndroidManifest.xml

- Declare activity's intent filters in manifest:
- e.g., make it launchable from home screen:
  - Action: MAIN. Category: LAUNCHER



```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.seanho.helloandroid" android:versionCode="1"
    android:versionName="1.0">
    <application android:icon="@drawable/icon" android:label="@string/app_name"
        android:debuggable="true">
        <activity android:name=".HelloAndroid" android:label="@string/app_name">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
    <uses-sdk android:minSdkVersion="4" />
</manifest>
```