

Recent Assignments

- You must “Add file” and “Send file” to submit homework in Blackboard Digital Dropbox
 - Following not late if in by 4pm today:
 - Critical Analysis of Apps
 - Lab1
 - Late policy will start at 4pm for all future assignments
- Check Blackboard and schedule on a regular (daily) basis

Upcoming Assignments

- Readings:
 - Chapter 3 by today
- Vision and Scope (docs and posters) due Wednesday, January 13
 - Poster Session and Team Formation Wednesday
- Quiz 2 on Friday, January 15
- Lab 2 due Wednesday, January 20
 - Start early, it is harder than lab 1
- Lab 3 should be out this Friday

Android Design Philosophy

- Applications should be:
 - Fast
 - Resource constraints: <200MB RAM, slow processor
 - Responsive
 - Apps must respond to user actions within 5 seconds
 - Secure
 - Apps declare permissions in manifest
 - Seamless
 - Usability is key, persist data, suspend services
 - Android kills processes in background as needed

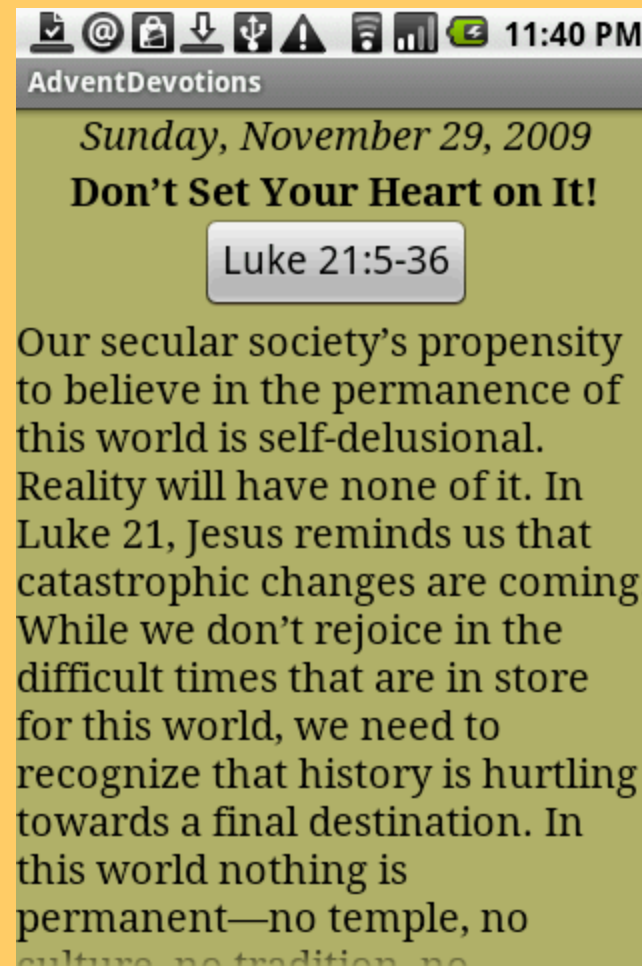
Leveraging the web

- To keep your apps fast and responsive, consider how you can leverage the web
 - What _____ can be _____ on a server or in the cloud?
 - Tasks/performed
 - Data/persisted
 - Data/retrieved
 - Beware, data transfer is also expensive and can be slow

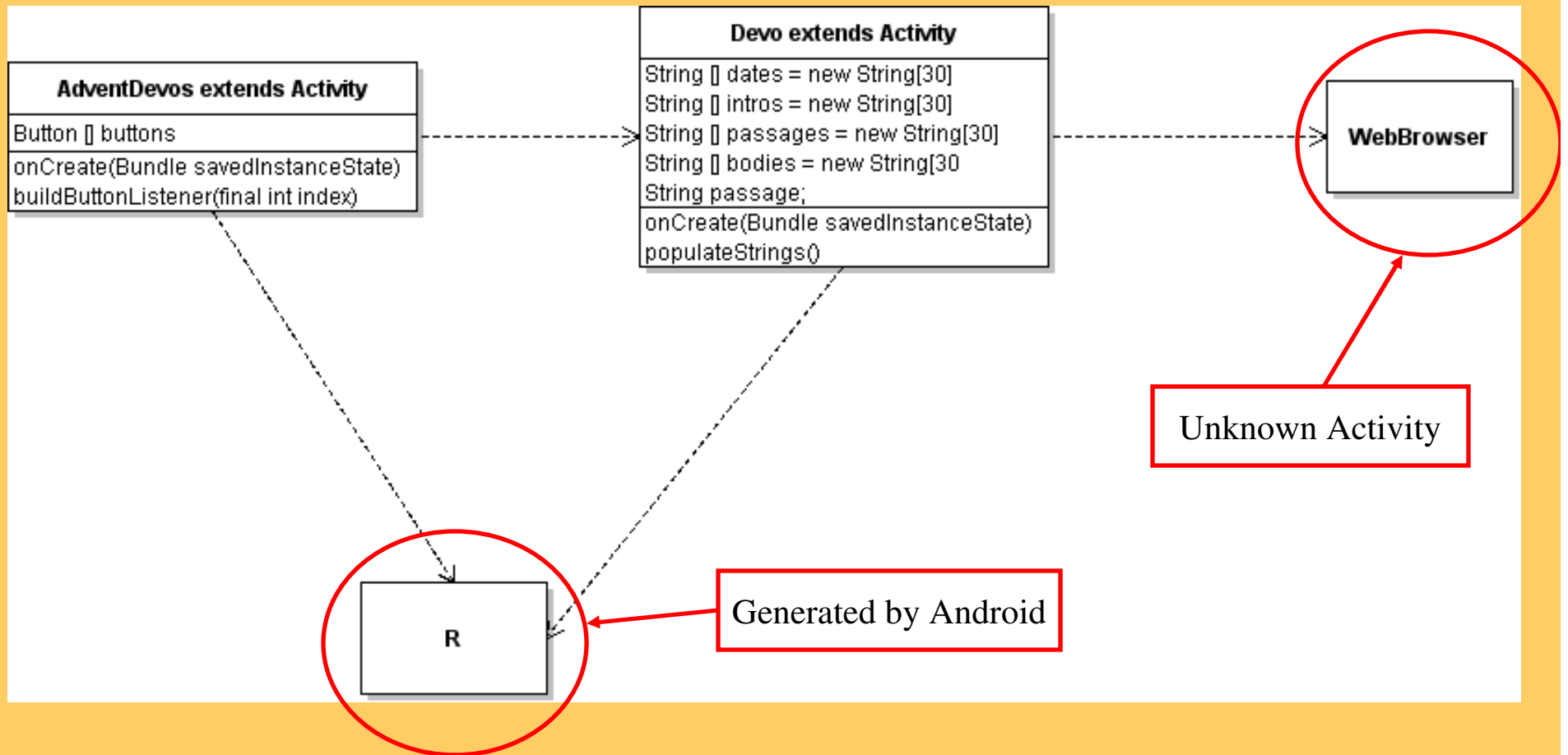
Apple vs. Google

- Open Handset Alliance
 - 30+ technology companies
 - Commitment to openness, shared vision, and concrete plans
- Compare with Mac/PC battles
 - Similar (many PC manufacturers, one Apple)
 - Different (Microsoft protects Windows for profit, Google gives away Android)

A First Example: Advent Devotions

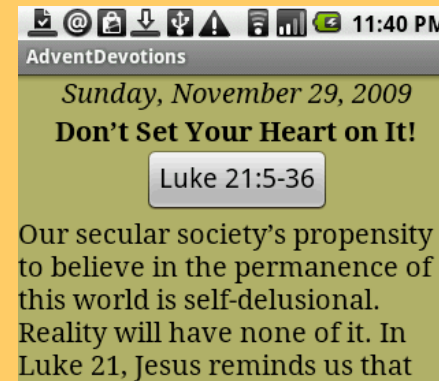
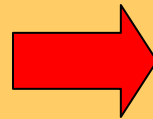
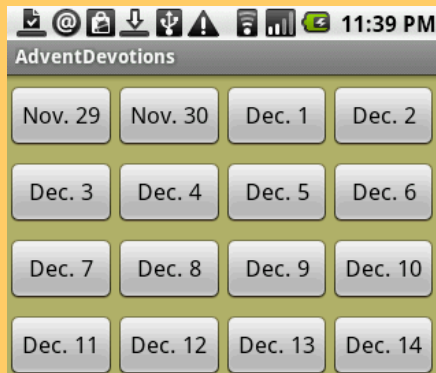


UML Class Diagram



Two Activities in Advent Devotions

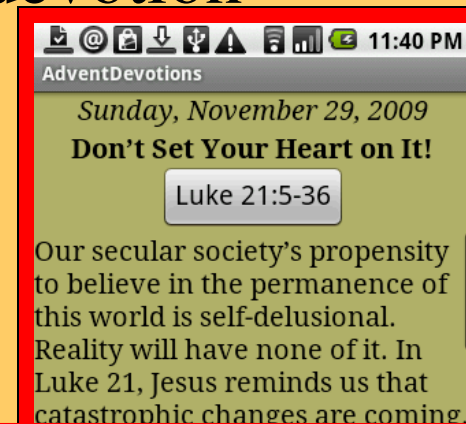
- AdventDevos displays the calendar of dates
- Devo displays a single devotion



```
Intent myIntent = new Intent(AdventDevos.this, Devo.class);  
myIntent.putExtra("ButtonNum", ""+index);  
startActivity(myIntent);
```


Two Activities in Advent Devotions

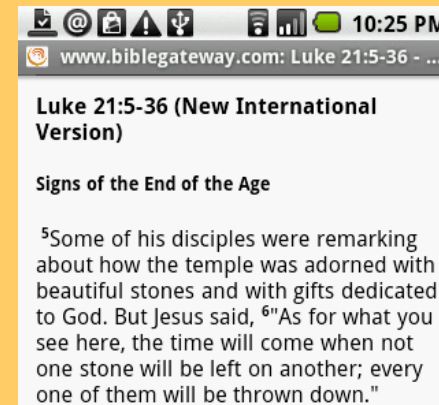
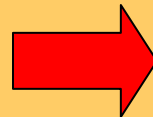
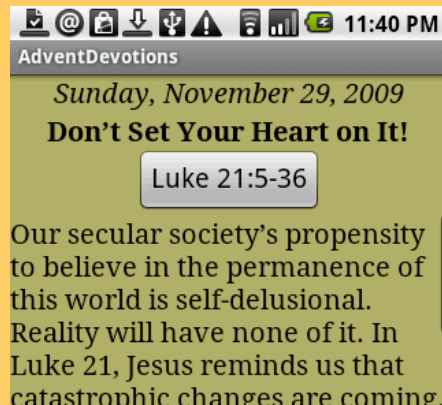
- AdventDevos displays the calendar of dates
- Devo displays a single devotion



```
Bundle extras = getIntent().getExtras();  
String value = extras.getString("ButtonNum");  
Integer buttonNum = Integer.valueOf(value);
```

Launching an Intent you didn't write

- Devos has button to URL
- Browser launched



```
Intent i = new Intent(Intent.ACTION_VIEW,  
    Uri.parse("http://www.biblegateway.com/passage/?search="+  
    passage+"&version=NIV"));  
startActivity(i);
```

Android Activity

- “An activity is a single, focused thing that the user can do. Almost all activities interact with the user, so the Activity class takes care of creating a window for you in which you can place your UI with `setContentView(View)`.”

<http://developer.android.com/reference/android/app/Activity.html#ActivityLifecycle>

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?> Each upload to Market requires versionCode increment
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.simexusa.adventdevotions"
    android:versionCode="2"
    android:versionName="1.0">
    <application android:icon="@drawable/star" android:label="@string/app_name" android:debuggable="true">
        <activity android:name=".AdventDevos"
            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=".Devo"/>
    </application>
    <uses-sdk android:minSdkVersion="3" />
    <uses-permission android:name="android.permission.INTERNET" />
</manifest>
```

Each upload to Market requires versionCode increment

Specifies icon for launching app

Specifies icon for launching app

Specifies activity to be launched at startup

Security permissions requested from user on install

Look around the files

The screenshot displays the Eclipse IDE interface for an Android project named 'AdventDevotions'. The Package Explorer on the left shows the project structure, including the 'src' directory with 'AdventDevos.java' and 'Devo.java', and various resource files like 'drawable', 'layout', and 'values'. The main editor window shows the code for 'AdventDevos.java', which is an Android Activity class. The code includes package declarations, imports, and an 'onCreate' method that initializes a 26-element 'buttons' array and binds each element to a specific button ID in the layout.

```
1 package com.simexusa.adventdevotions;
2
3 import com.simexusa.adventdevotions.R;
4
11
12 public class AdventDevos extends Activity {
13     private Button [] buttons;
14     /** Called when the activity is first created. */
15     @Override
16     public void onCreate(Bundle savedInstanceState) {
17         super.onCreate(savedInstanceState);
18         setContentView(R.layout.main);
19         buttons = new Button[26];
20         buttons[0] = (Button) findViewById(R.id.Button01);
21         buttons[1] = (Button) findViewById(R.id.Button02);
22         buttons[2] = (Button) findViewById(R.id.Button03);
23         buttons[3] = (Button) findViewById(R.id.Button04);
24         buttons[4] = (Button) findViewById(R.id.Button05);
25         buttons[5] = (Button) findViewById(R.id.Button06);
26         buttons[6] = (Button) findViewById(R.id.Button07);
27         buttons[7] = (Button) findViewById(R.id.Button08);
28         buttons[8] = (Button) findViewById(R.id.Button09);
29         buttons[9] = (Button) findViewById(R.id.Button10);
```

Layouts and Resources

- See main.xml and devo.xml
 - Activity associates with layout xml file with `setContentView(R.layout.main);` or `setContentView(R.layout.devo);` in `onCreate()`
 - Note `TableLayout` and `TableRow` similar to `<table>` and `<tr>` in html
 - Note use of `dimen` (see `values/dimens.xml`) and `color` (see `values/colors.xml`)
 - Also see `strings.xml`