Tackling Android Fragmentation

Jfokus 2012 @Glennbech , Inmeta consulting

Andy Rubin

@Arubin

It takes about 140 liters (37 US gal) of water to grow the coffee beans needed to produce one cup of coffee

California · http://www.spies.com

Følg

7 TWEETS

1 FØLGER

45,372 FØLGERE

Hold kontakten med Andy Rubin

Registrer deg idag

Fullt navn

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twitter

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Tweets

Andy Rubin @Arubin 28 des

UPDATE: There were 3.7M Android devices activated on 12/24 and 12/25.

Andy Rubin @Arubin 21 des

There are now over 700,000 Android devices activated every day

Andy Rubin @Arubin 28 juni

There are now over 500,000 Android devices activated every day, and it's growing at 4.4% w/w

Andy Rubin @Arubin 7 apr

I feel like I've been having a Gene Amdahl moment for the past week... http://goo.gl/PLbd0

Andy Rubin @Arubin 3 feb 11

I truly believe the Android team is the hardest working team in mobile.

Andy Rubin @Arubin 9 des 10

There are over 300,000 Android phones activated each day.

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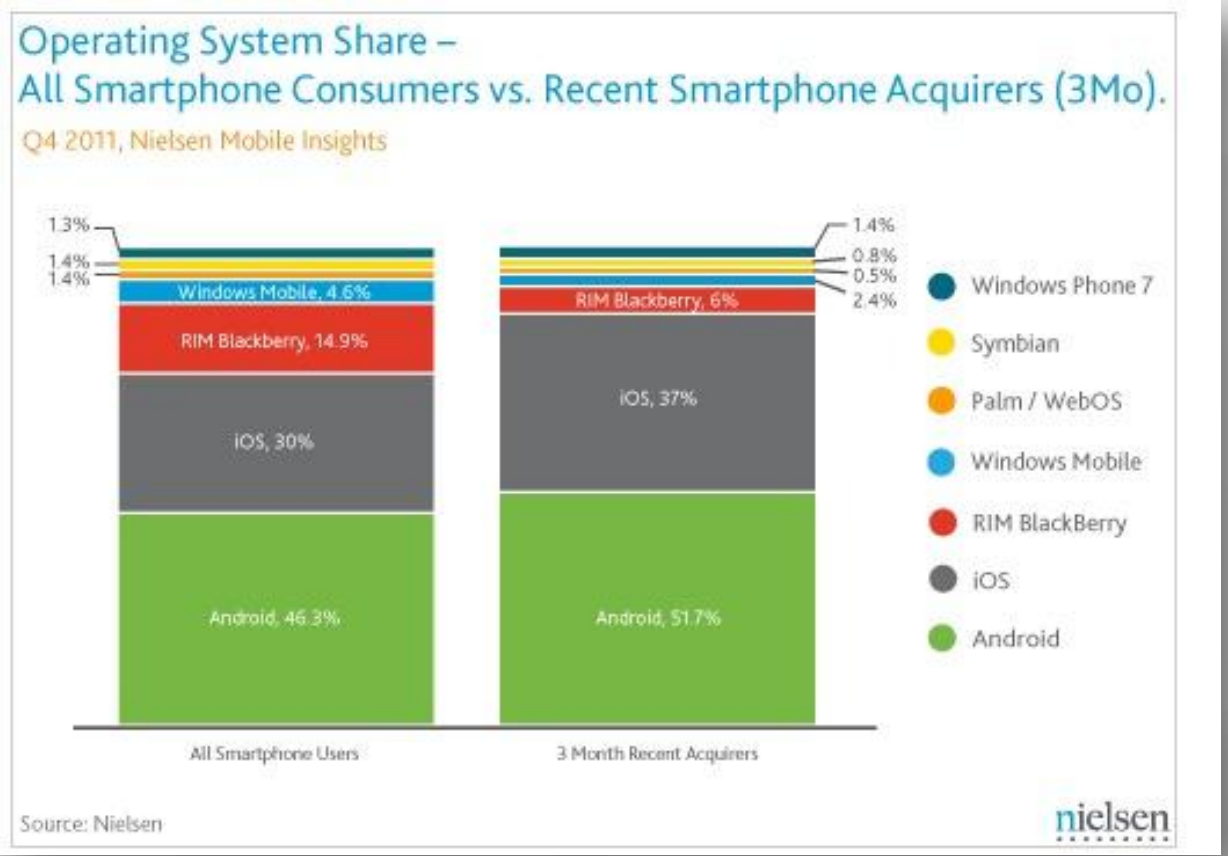
Operating System Share –
All Smartphone Consumers vs. Recent Smartphone Acquirers (3Mo).
Q4 2011, Nielsen Mobile Insights
1.3%
1.4%
1.4%
Windows Mobile, 4.6%
RIM Blackberry, 14.9%
iOS, 30%
Android, 46.3%
1.4%
0.8%
0.5%
2.4%
RIM Blackberry, 6%
iOS, 37%
Android, 51.7%
All Smartphone Users
3 Month Recent Acquirers
Windows Phone 7
Symbian
Palm / WebOS
Windows Mobile
RIM BlackBerry
iOS
Android
Source: Nielsen
nielsen

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Arubin

the definition of open: "mkdir android ; cd android ; repo init -u git://android.git.kernel.org /platform/manifest.git ; repo sync ; make"

44 minutes ago via web

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8:19 AM
See all your apps.
Touch the Launcher icon.
1 of 6
with Google
IDEOS

Nairobi

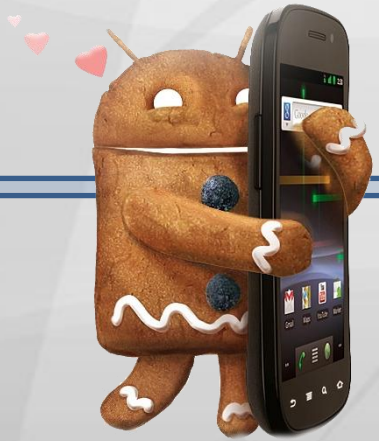
kindle fire
Newsstand
Books
Music
Video
Docs
Apps
STEPHEN KING
GREEN LANTERN
WIRED
THE MENTAL MACHINE

HTC 3G SLIDE

On sale
May 2010

December 2010

Got Gingerbread
May 2011



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Facts, as of December 2011

Android

- Gingerbread (2.3) dominant
- Froyo (2.2) still at 30%
- Phones with no ICS upgrade plan still sold
- A dominant ICS user base is

iOS

- 66% on iOS 5 or above

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WHO CARES?

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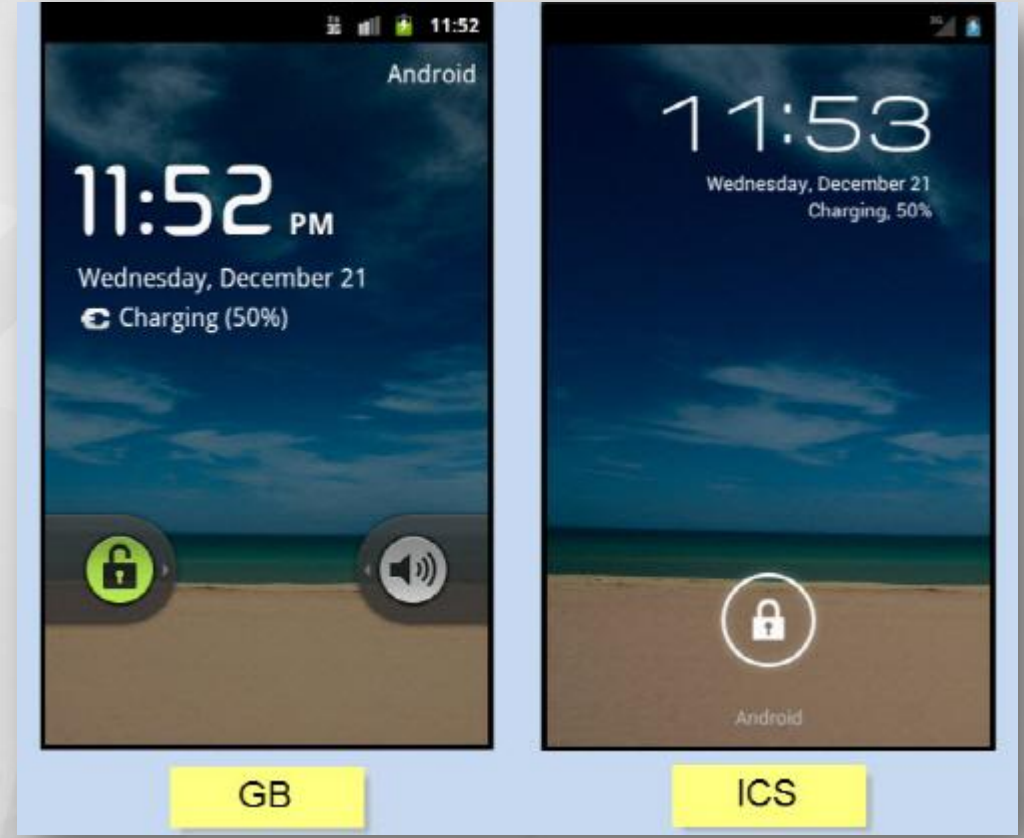
11:52
Android
11:52 PM
Wednesday, December 21
Charging (50%)
11:53
Wednesday, December 21
Charging, 50%
Android
GB
ICS

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Agenda

- How to deal with OS versions from 1.6 to 4.X
- How to deal with Screen Sizes from 2 inches to 10 inches
- How to create apps that can be deployed to both phones and tablets …

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LIST OS VERSION

Distribution	API level	%
4.0.x *Ice Cream Sandwich*	14-15	1.0%
3.x.x *Honeycomb*	11-13	3.4%
2.3.x *Gingerbread*	9-10	58.6%
2.2 *Froyo*	8	27.8%
2.0, 2.1 *Eclair*	7	7.6%
1.6 *Donut*	4	1.0%
1.5 *Cupcake*	3	0.6%

http://en.wikipedia.org/wiki/Android_(operating_system)

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Androidmanifest.xml

<uses-sdk
android:*minSdkVersion*=”7"
android:*targetSdkVersion*="14”
/>

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Example. Hello world

```
public class TargetSDKVersionExample extends Activity {

    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.menu, menu);
        return true;
    }
}
```

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Example. Menu.xml

```
<menu >
        <item android:id="@+id/menu_save«
        android:icon="@drawable/ic_menu_save"
        android:title="@string/menu_save"
        android:showAsAction="ifRoom|withText" />
</menu>
```

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ICS

Gingrerbread

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Androidmanifest.xml

<uses-sdk
android:*minSdkVersion*=”7"
android:*targetSdkVersion*="10”
/>

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ICS

Gingrerbread

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Checking for version

```
public static boolean isHoneycombOrLater() {
    return Build.VERSION.SDK_INT >=
        Build.VERSION_CODES.HONEYCOMB;
}
```

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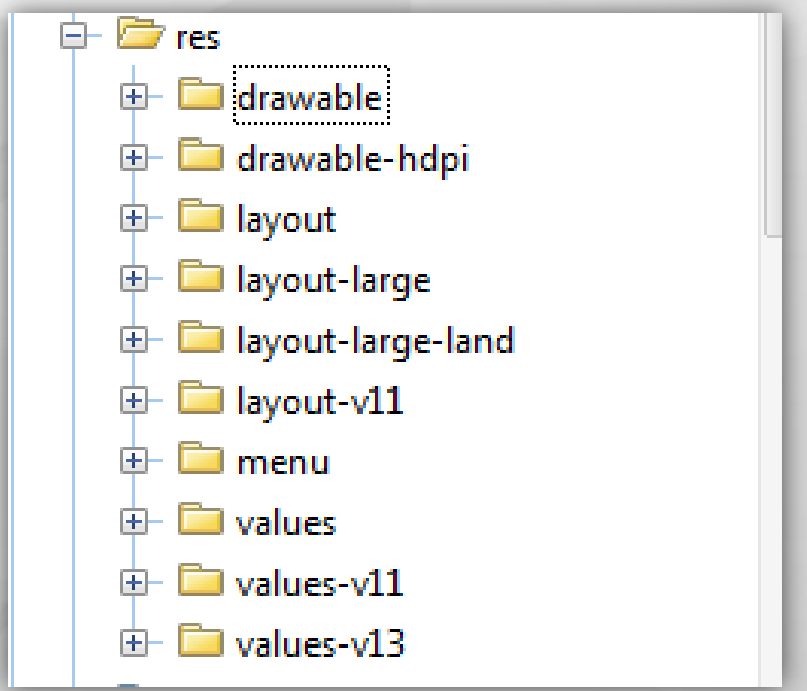
Screen size

Best Match

- Excellent support for providing resources based on device configuration



Full Control

- mcc310-mnc004 (US/Verizon)
- Car/desk (docking)
- Night mode

http://developer.android.com/guide/topics/resources/providing-resources.html

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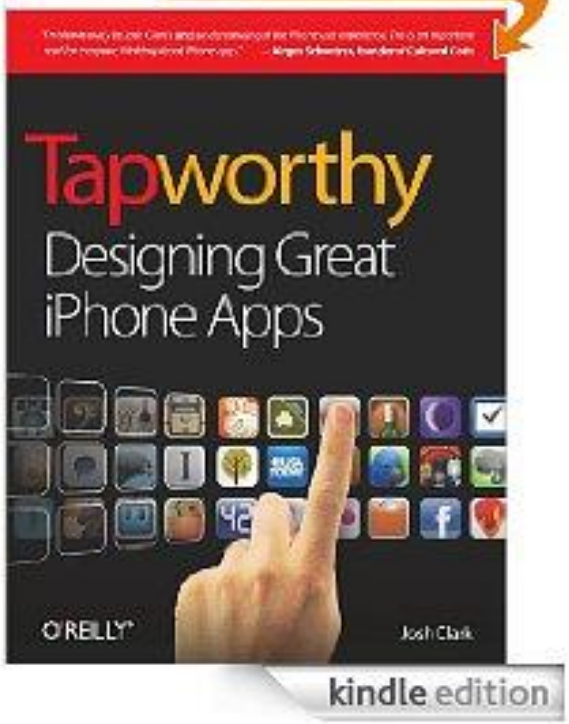
The Magic Number Is 44

But just how big is big enough when it comes to iPhone tap targets? Well, what's the size of a fingertip? Apple pegs it precisely at 44 pixels and this measure appears reliably throughout the standard iPhone controls. In portrait orientation, 44 pixels is the height of buttons in the Calculator app, of the keys of the iPhone's virtual keyboard, of items in a standard list display, of the screen-topping navigation bar, and the list goes on. (With the iPhone's 163 ppi screen resolution, 44 pixels is about 7mm, or just a hair over ¼ inch.)

The 44-pixel block is, in many ways, the basic unit of measurement for the iPhone interface, establishing the visual rhythm of many iPhone apps. That metric is significant as the recommended minimum size to make a tap target (like a button or list item) easily and reliably tappable. Put another way, it's the spread of a fingertip pressed to the screen. By building its standard controls in proportion to that measure, Apple created a device that's not only built *for* the hand, but *of* the hand—measured out in finger-sized units. (In fact, it's wise to craft your overall design to a 44-pixel rhythm, a topic you'll explore in Design to a 44-Pixel Rhythm.)

Ideally, any button or other tap target should be at least 44 × 44 pixels. That doesn't necessarily mean that what you see—the outline of the button itself—has to spread over that entire area. Buttons inside the standard navigation bar, for example, are only 29 pixels high, but their *tap area* extends to the full 44-pixel height of the navigation bar. Even if you tap just above or below the button, it still catches the tap as long as you're still inside the

Click to LOOK INSIDE!



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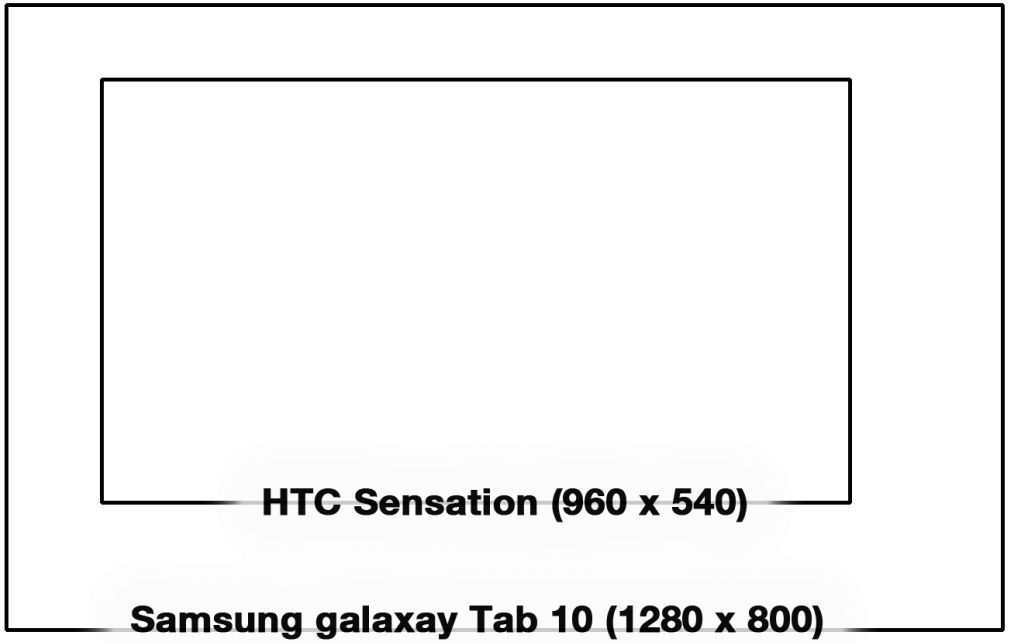

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DPs to the rescue

- DP is «Density independent pixel»
- Reflects physcal size

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A Small Experiment

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
             android:background="@drawable/tiledbackground"
            android:layout_width="match_parent"
            android:layout_height="match_parent">

   <Button android:layout_centerInParent="true"
android:background="#33333a"
         android:layout_width="100dp"
         android:layout_height="100dp"
         android:textColor="#FFFFFF"
         android:text="100dp x 100dp"
         android:textSize="12dp"/>
</RelativeLayout>
```

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HTC Sensation

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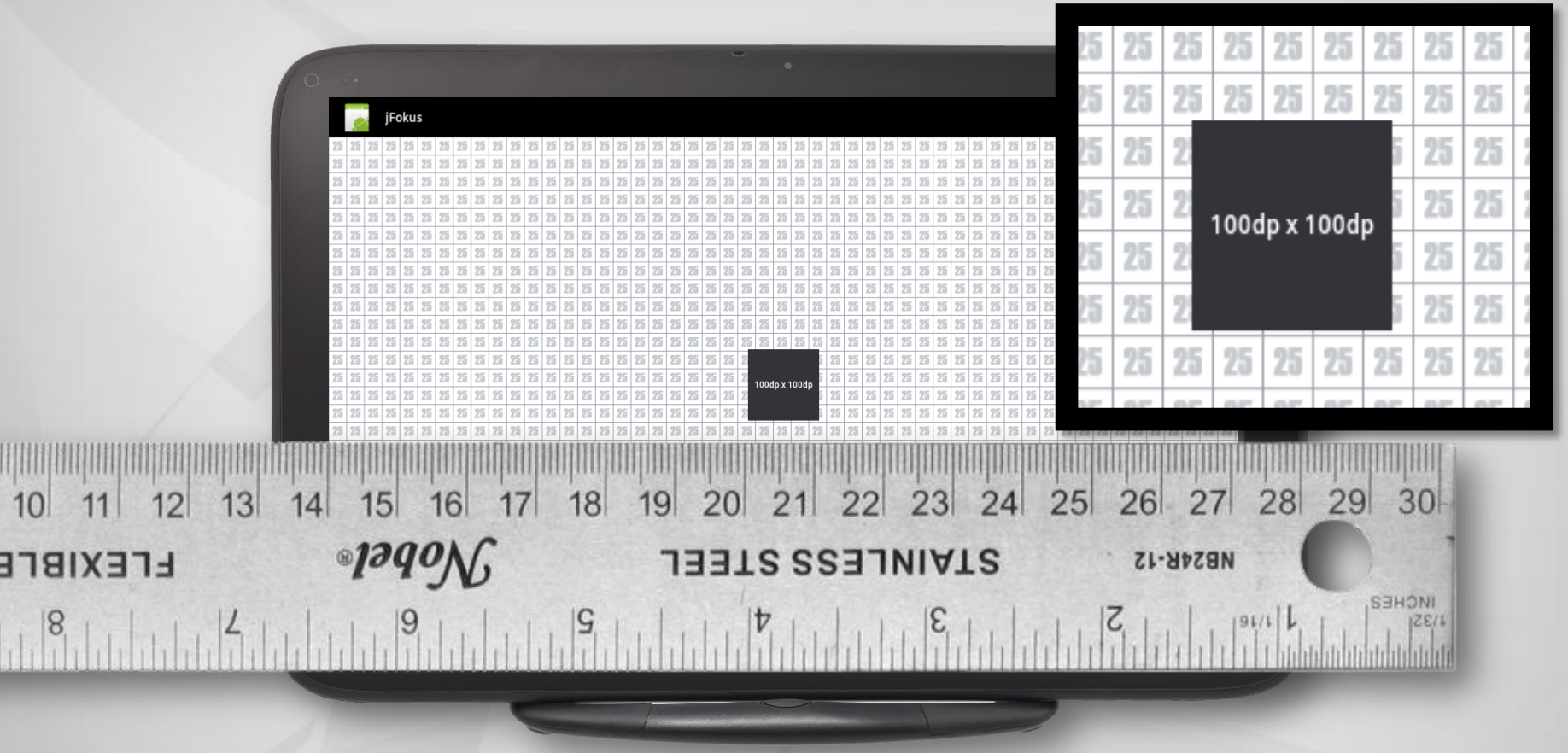

Samsung Galaxy Tab 10.1

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Huawei IDEOS

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Fragments crash course

- Introduced in Android 3.0
- Reusable UI components
- Very usefull for supporting a large diversity of screen sizes

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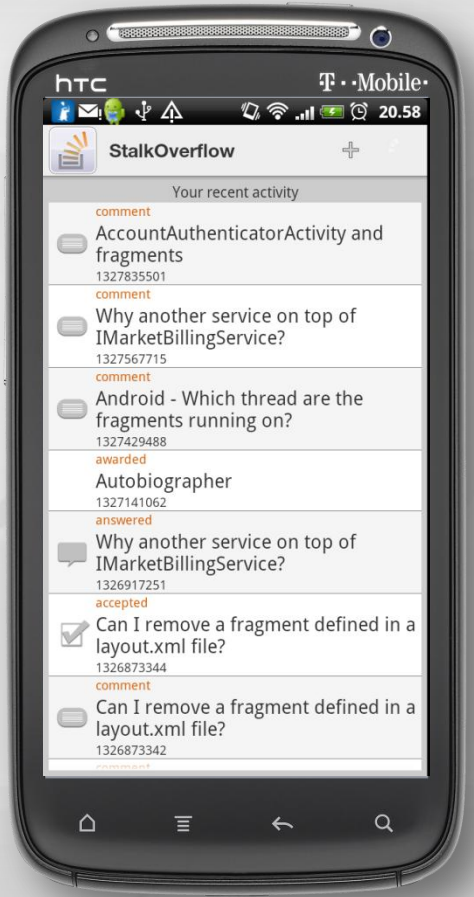
htc
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StalkOverflow
Your recent activity
comment
AccountAuthenticatorActivity and fragments
1327835501
comment
Why another service on top of IMarketBillingService?
1327567715
comment
Android - Which thread are the fragments running on?
1327429488
awarded
Autobiographer
1327141062
answered
Why another service on top of IMarketBillingService?
1326917251
accepted
Can I remove a fragment defined in a layout.xml file?
1326873344
comment
Can I remove a fragment defined in a layout.xml file?
1326873342

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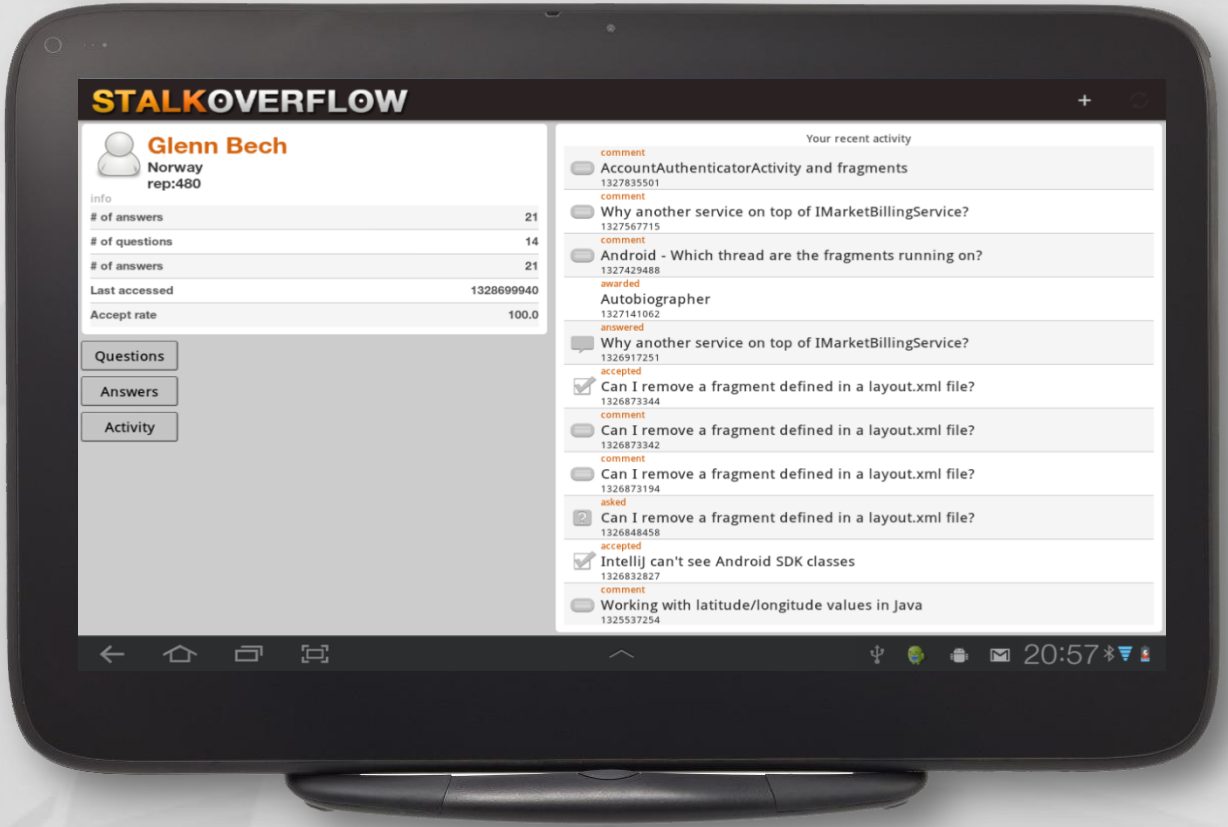
STALKOVERFLOW
Glenn Bech
Norway
rep:480
info
# of answers 21
# of questions 14
# of answers 21
Last accessed 1328699940
Accept rate 100.0
Questions
Answers
Activity
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Can I remove a fragment defined in a layout.xml file?
1326873194
asked
Can I remove a fragment defined in a layout.xml file?
1326848458
accepted
Intellij can't see Android SDK classes
1326832827
comment
Working with latitude/longitude values in Java
1325537254
20:57

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Fragments Crash course

```
public class QuestionListFragment extends Fragment
   public void onAttach(Activity activity) {
        super.onAttach(activity);
        if (!(activity instanceof OnQuestionSelectedListener)) {
            throw new ClassCastException("Does not implement OnUserSelectedListener");
        }
        mListener = (OnUserSelectedListener) activity;
    }
  public View onCreateView(LayoutInflater inf, ViewGroup container, Bundle  state) {
   // inflate some view
  }
}
```

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Using fragments #1 Layout

```
<FrameLayout >
        <fragment class="somefragment"/>
</FrameLayout>
```

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Using Fragments #2 From code

```
<FrameLayout android:id="@+id/right_pane"
</FrameLayout>
```

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Using Fragments #2 From code

```
QuestionListFragment flf = new QuestionListFragment(true);
FragmentTransaction tx =
getSupportFragmentManager().beginTransaction();
tx.add(R.id.right_pane, flf);
tx.commit();
```

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Example - Stalk overflow

- Monitors activity on your questions and answers on stackoverflow.com
- Scheduled for release ASAP :)
- Runs on Android 1.6 to 4.0
- Runs on 2.8 inch and 10.1 tablet Tablet
- Runs on Kindle fire 7 inch tablet

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19:47
StalkOverflow
Glenn Bech
Norway
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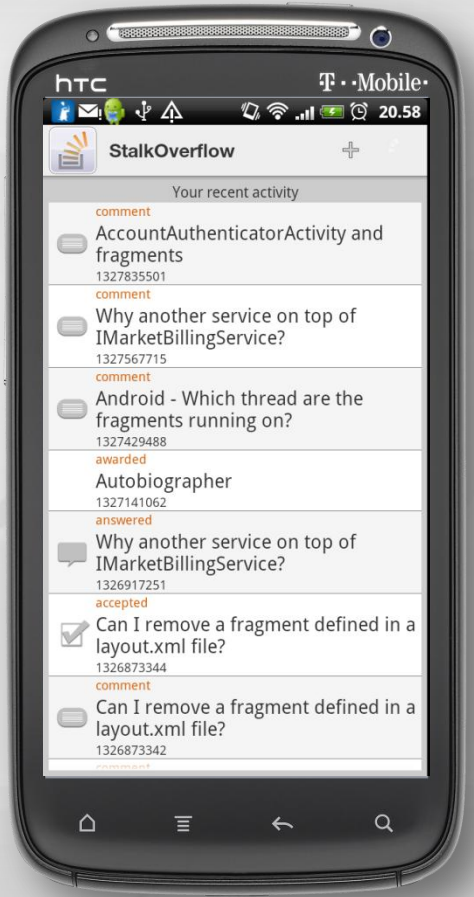
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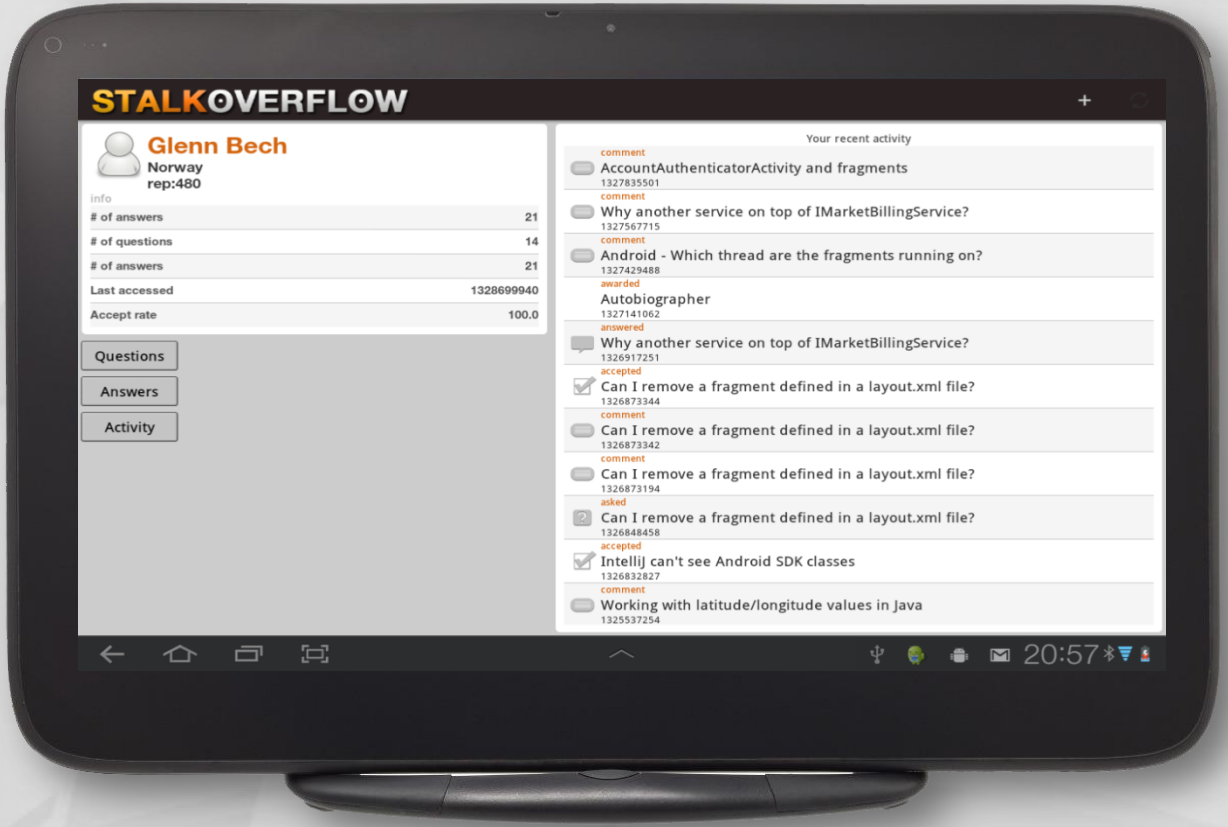
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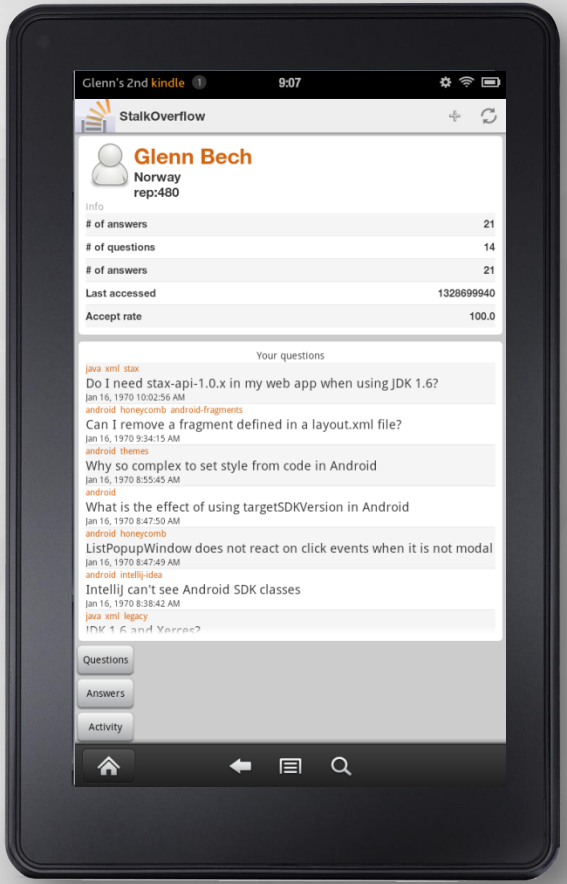
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Your questions
java xml stax
Do I need stax-api-1.0.x in my web app when using JDK 1.6?
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android honeycomb android-fragments
Can I remove a fragment defined in a layout.xml file?
Jan 16, 1970 9:34:15 AM
android themes
Why so complex to set style from code in Android
Jan 16, 1970 8:55:45 AM
android
What is the effect of using targetSDKVersion in Android
Jan 16, 1970 8:47:50 AM
android honeycomb
ListPopupWindow does not react on click events when it is not modal
Jan 16, 1970 8:47:49 AM
android intellij-idea
Intellij can't see Android SDK classes
Jan 16, 1970 8:38:42 AM
java xml legacy
Questions
Answers
Activity

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Android Support Libraries

- Backport of Fragments
- You can use fragments in android 1.6 and onward

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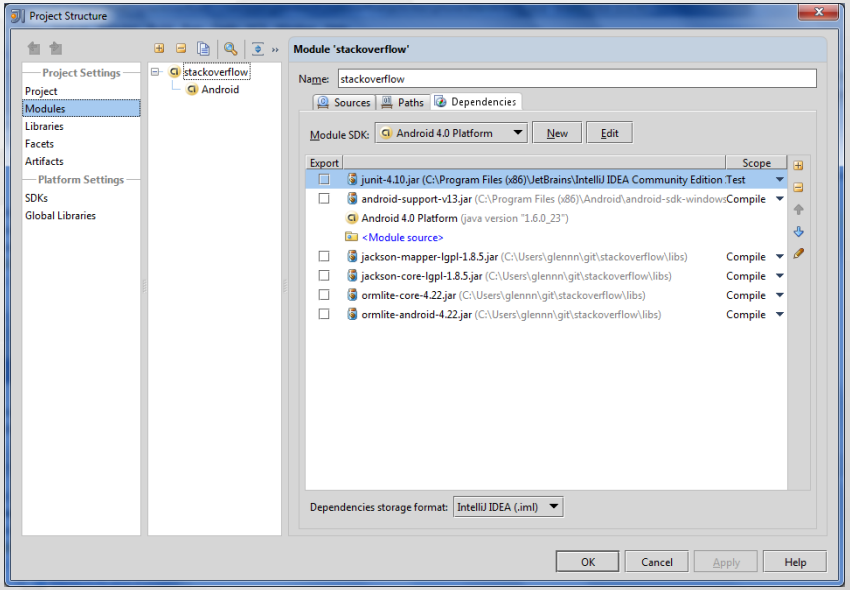
Setup

- Download using SDK manager



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Android Support Libraries

- Activities with fragments must extend FragmentActivity
- Fragments extend android.support.v4.app.Fragment
- getSupportFragmentManager() vs getFragmentMananger()

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Support Libraries, DOHS!

- No action bar
- Not cool to force extension of FragmentActivity. Cannot extend MapActivity
- Code not directly portable to ICS
- Can’t use some of the nice ICS features like tabs in the action bar with Fragments from the support library

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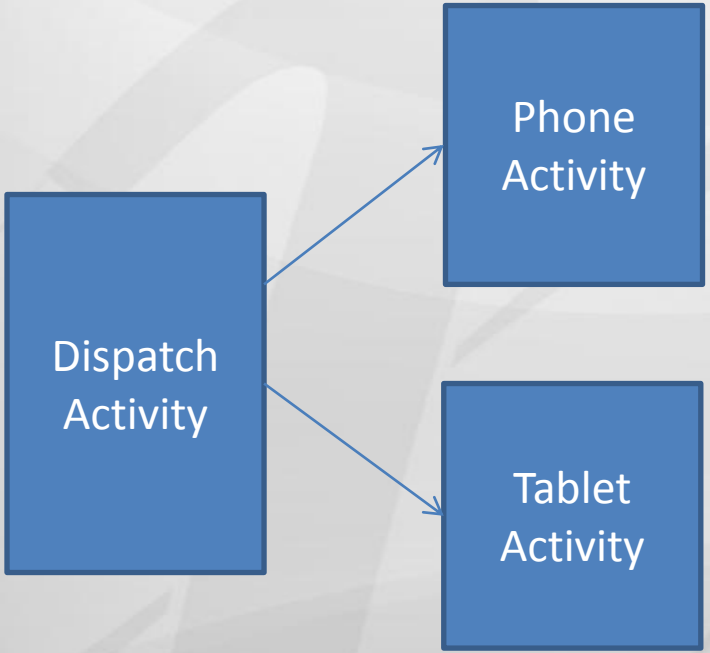
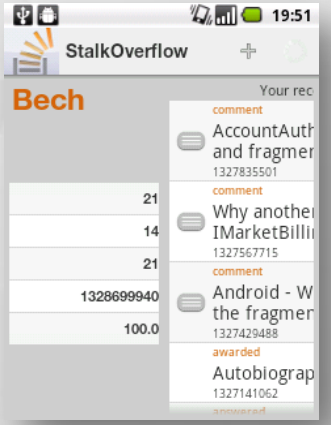
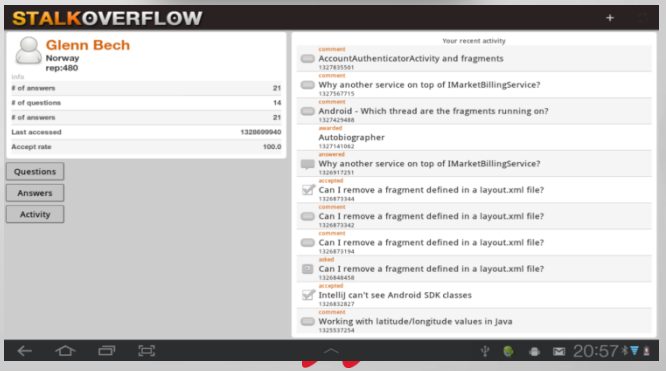
Different activities backing layouts







Check for size

```
public static boolean isExtraLarge(Context context) {
        return
            (context.getResources().getConfiguration().screenLayout
                & SCREENLAYOUT_SIZE_MASK) ==
SCREENLAYOUT_SIZE_XLARGE;
    }
```

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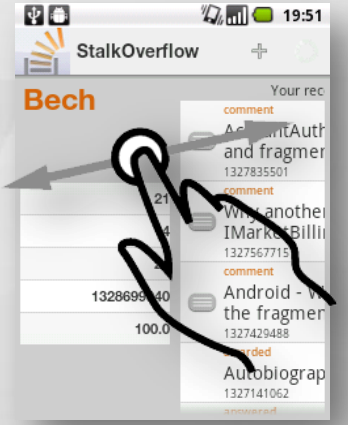
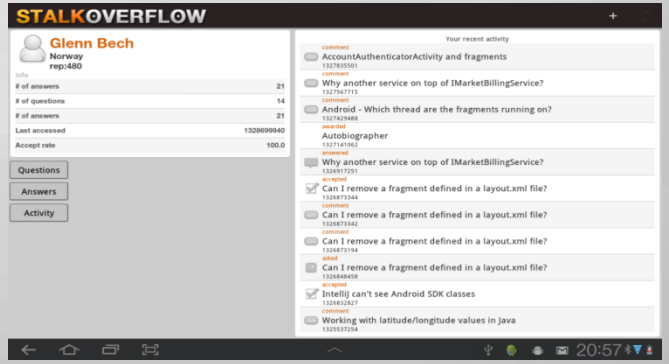
Different activities backing layouts

```
protected void onStart() {


   if (UIUtils.isExtraLarge(this) || UIUtils.isLarge(this)) {
          Intent i = new Intent().setClass(this,
             com.xxx.tablet.MainActivity.class);
          startActivity(i);
       } else {
          Intent i = new Intent().setClass(this,
             com.gxxx.phone.MainActivity.class);
          startActivity(i);
       }
}
```





Conclusion

- The Android OS and devices are both forward- and backwards compatible in regard to OS versions
- Android has excellent support for different screen sizes and densities
- By using the Support libraries, you can write code that use fragments and deploy on tablets and phones

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“I am an old man and have known a great many troubles, but most of them never happened” – Mark Twain

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