

Android™



Introductie

- **Introductie**
- **Basis**
 - *Activities*
 - *Fragments*
 - *Layouts*
 - *R*
 - *Manifest*
- **Incrementer app**

Android

Wat is Android en wat gaan we er mee doen?

INTRODUCTIE

Wie zijn wij?

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Wat is Android?

- OS voor telefoons, tablets, ...
- Linux Kernel



Wat is Android?

Java

dynamisch

- Logica
- Events

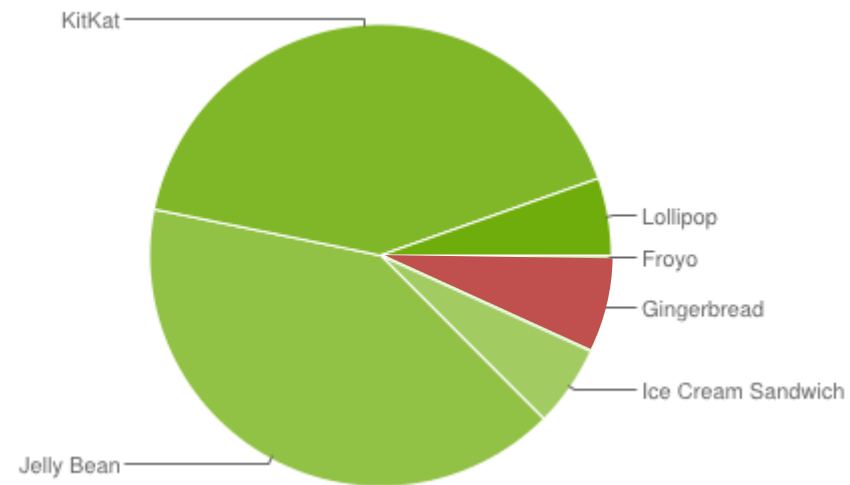
XML

statisch

- Opmaak
- Language support
- Manifest

Wat gaan we doen?

- Applicatie voor 4.0+
 - *API level 14+*



Android distributie op 06-04-2015

Disclaimer

- Slides zijn onvolledig
 - Je hoeft ze ook niet te leren
- Zelfstudie!
 - Documentatie is erg uitgebreid!
 - Tutorial videos

Android

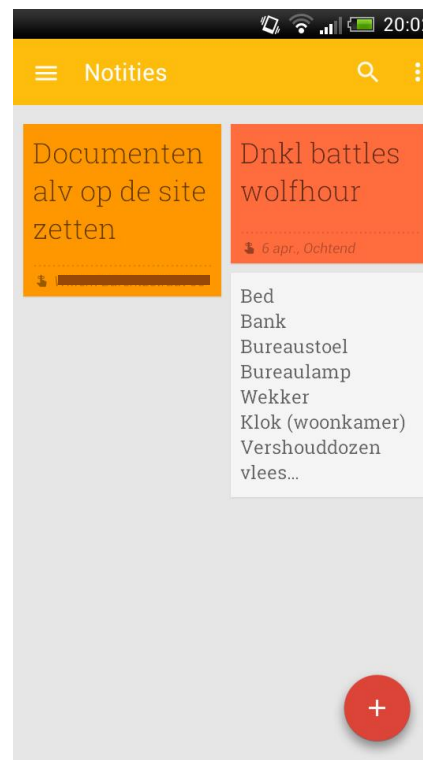
ACTIVITIES | FRAGMENTS | LAYOUTS | R | MANIFEST

BASIS

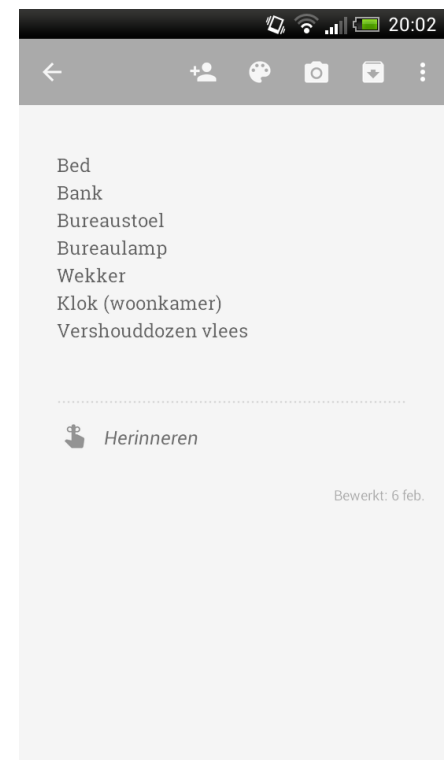
Wat is een Activity?

- Handeling binnen app
- Scherm

Overzicht



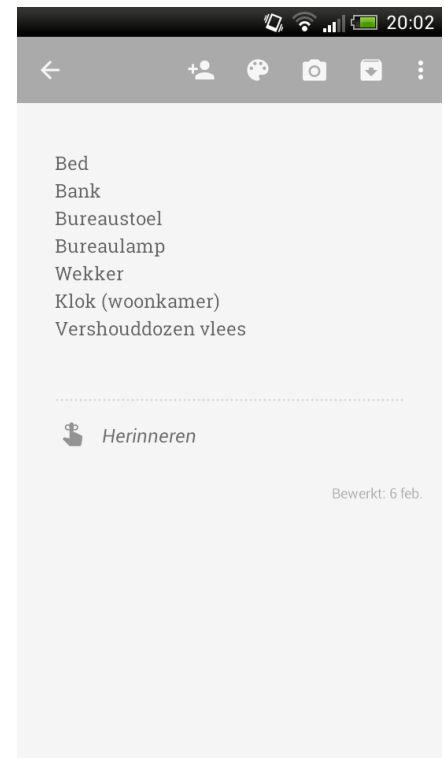
Notitie



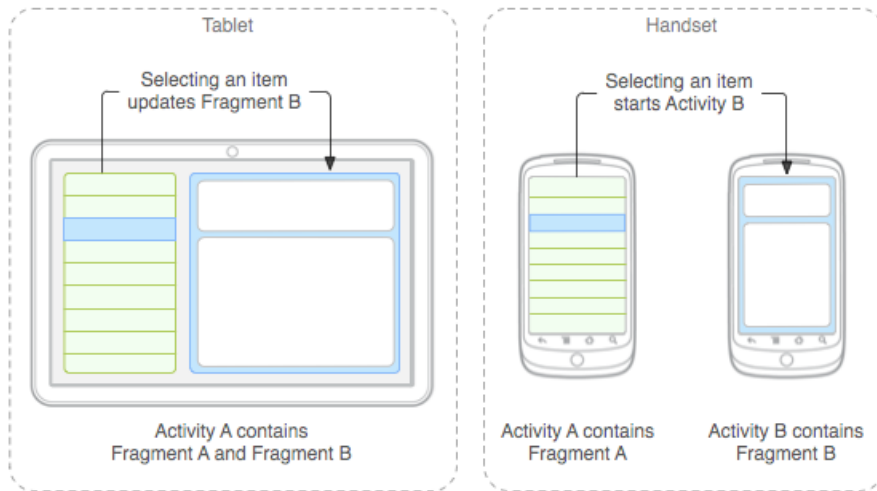
Wat is een Activity?

- Bevat logica
 - Clicks, touches
- Lifecycle
- *Beeldvullend* (“Eén scherm”)
- Meerdere vensters?

Notitie



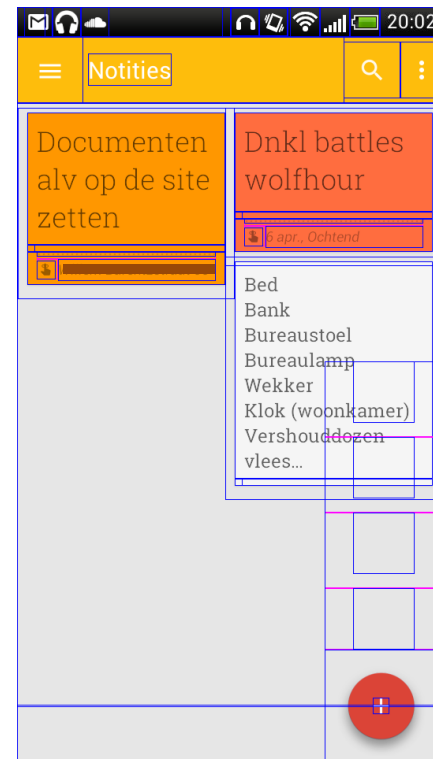
Wat zijn Fragments?



- Voor als je activity meerdere vensters/stappen bevat

Layouts

- XML
- Bouwstenen
 - TextView, EditText, ImageView
 - RelativeLayout, LinearLayout, ScrollView



Layouts

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#888" >

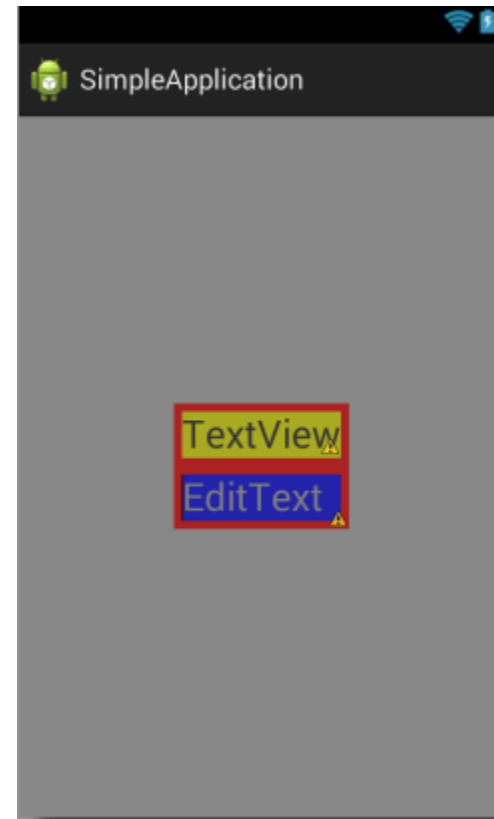
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:orientation="vertical"
        android:background="#A22"
        >

        <TextView
            android:id="@+id/textView1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="@string/username"
            android:background="#AA2"
            android:textSize="25sp"
            android:layout_margin="5dp"/>

        <EditText
            android:id="@+id/editText1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/password"
            android:background="#22A"
            android:textSize="25sp"
            android:layout_margin="5dp">

            <requestFocus />
        </EditText>

    </LinearLayout>
</RelativeLayout>
```



Layouts

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#888" >

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:orientation="vertical"
        android:background="#A22"
        >

        <TextView
            android:id="@+id/textView1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="@string/username"
            android:background="#AA2"
            android:textSize="25sp"
            android:layout_margin="5dp"/>

        <EditText
            android:id="@+id/editText1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/password"
            android:background="#22A"
            android:textSize="25sp"
            android:layout_margin="5dp">

            <requestFocus />
        </EditText>

    </LinearLayout>
</RelativeLayout>
```

XML attributen

- Width, height
 - *wrap_content/match_parent*
- Id
 - *Alleen als je die later nodig hebt*
- Background
 - #ARGB, @drawable/

Java + XML

- Hoe verwijst je naar
 - XML layouts?
 - Afbeeldingen?
 - ...

Wat is R?

```
/* AUTO-GENERATED FILE. DO NOT MODIFY.

package com.appic.music.player;

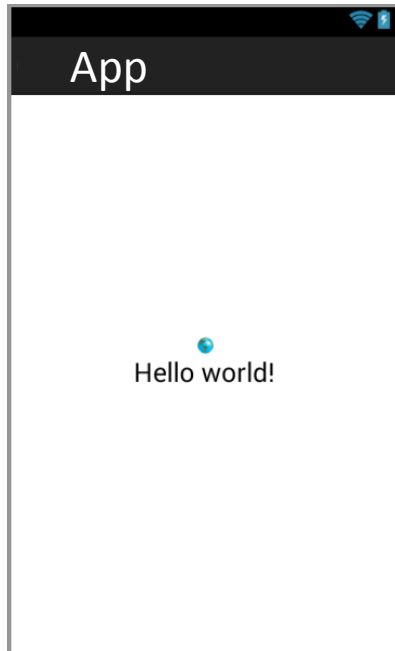
public final class R {
    public static final class attr {
    }
    public static final class dimen {
        /** Default screen margins, per the Android Design guidelines.
        public static final int activity_horizontal_margin=0x7f040000;
        public static final int activity_vertical_margin=0x7f040001;
        public static final int play_bar_height=0x7f040002;
    }
    public static final class drawable {
        public static final int ic_launcher=0x7f020000;
    }
    public static final class id {
        public static final int action_settings=0x7f080003;
        public static final int btn_play_next=0x7f080002;
        public static final int btn_play_previous=0x7f080000;
        public static final int btn_play_state=0x7f080001;
    }
    public static final class layout {
        public static final int play_bar=0x7f030000;
    }
    public static final class menu {
        public static final int play=0x7f070000;
    }
    public static final class string {
        public static final int action_settings=0x7f050001;
        public static final int app_name=0x7f050000;
        public static final int hello_world=0x7f050002;
    }
    public static final class style {
        Base application theme, dependent on API level. This theme is replaced
        public static final int AppBaseTheme=0x7f060000;
        /** Application theme.
        public static final int AppTheme=0x7f060001;
    }
}
```

- Resources
- Automatisch gegenereerd
- Verwijst naar XML, afbeeldingen, etc...

Mogelijkheden met R

- Dynamisch gedrag
- Layouts
 - Landscape vs Portrait
- Strings
 - Vertalingen

Localisatie met R



values

```
<resources>  
  <string name="hello_world">Hello world!</string>  
</resources>
```



values_nl-NL

```
<resources>  
  <string name="hello_world">Hallo wereld!</string>  
</resources>
```

Hoe gebruik je R?

Java

```
(new TextView(context)).setText(R.string.hello_world);
```

XML

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="@string/hello_world" />
```

- Aantal functies gebruiken int
- Geef daar referenties mee
- In XML gebruik je @ voor referenties
 - @string/...
 - @id/...
 - @color/...
 - @dimens/...

Wat is het Manifest?

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="rend1.example.simpleapplication"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk
        android:minSdkVersion="14"
        android:targetSdkVersion="19" />

    <application
        android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >
        <activity
            android:name="rend1.example.simpleapplication.MainActivity"
            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>
</manifest>
```

- Bevat informatie over app
 - Min. android versie,
 - Icon
 - **Alle** activiteiten
 - **Alle** Permissions
 - *Entry points*
 - *Wat is het startscherm?*

Wat is het Manifest?

```
FATAL EXCEPTION: main
Process: rend1.example.simpleapplication, PID: 12596
java.lang.RuntimeException: Unable to start activity ComponentInfo{
rend1.example.simpleapplication/rend1.example.simpleapplication.Mai
nActivity}: android.content.ActivityNotFoundException: Unable to fi
nd explicit activity class {rend1.example.simpleapplication/rend1.e
xample.simpleapplication.SecondActivity}; have you declared this ac
tivity in your AndroidManifest.xml?
at android.app.ActivityThread.performLaunchActivity(ActivityThread
.java:2195)
at android.app.ActivityThread.handleLaunchActivity(ActivityThread.
java:2245)
at android.app.ActivityThread.access$800(ActivityThread.java:135)
at android.app.ActivityThread$H.handleMessage(ActivityThread.java:
1196)
```

- Altijd declareren wat je gebruikt. Dit geldt voor:
 - Activity
 - Permissions
 - Internet
 - Accounts
 - Sd kaart
 - ...

Android

Voorbeeld applicatie

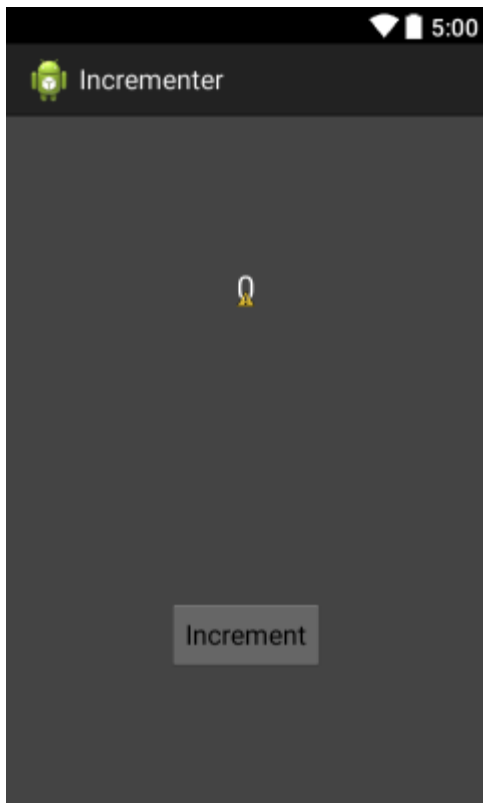
INCREMENTER APP

Requirements

- Knop voor incrementer
- Teller

Android | Incrementer app

Layout



```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.incrementer.MainActivity"
    android:orientation="vertical"
    android:background="#444">

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">

        <TextView
            android:id="@+id/counter"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:layout_centerVertical="true"
            android:text="0"
            android:textColor="#fff"
            android:textAppearance="?android:attr/textAppearanceLarge" />

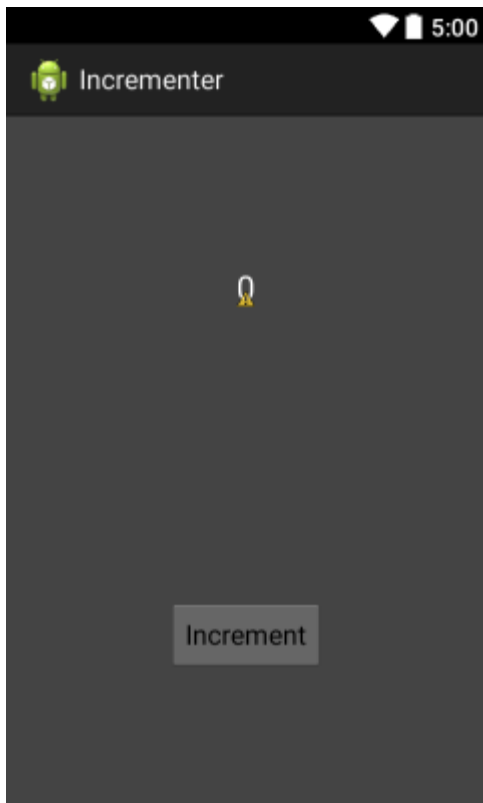
    </RelativeLayout>
    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:layout_centerVertical="true"
            android:onClick="increment"
            android:text="@string/increment" />

    </RelativeLayout>

</LinearLayout>
```

Layout



```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.incrementer.MainActivity"
    android:orientation="vertical"
    android:background="#444">

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">

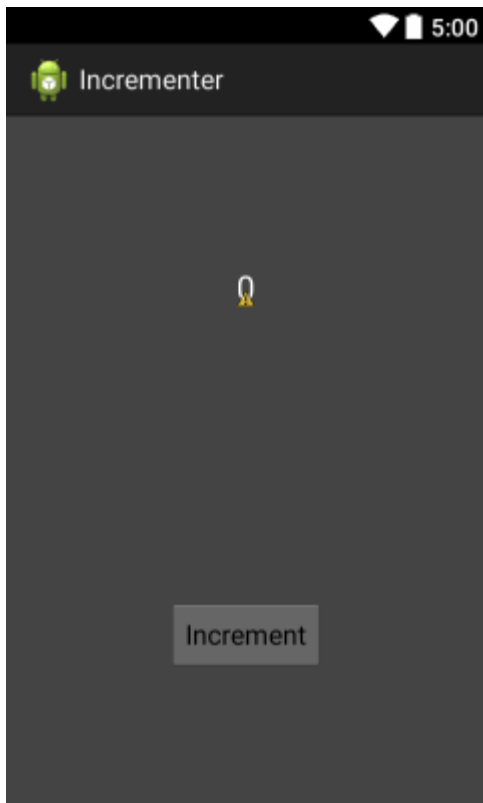
        <TextView
            android:id="@+id/counter"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:layout_centerVertical="true"
            android:text="0"
            android:textColor="#fff"
            android:textAppearance="?android:attr/textAppearanceLarge" />

    </RelativeLayout>
    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:layout_centerVertical="true"
            android:onClick="increment"
            android:text="@string/increment" />

    </RelativeLayout>
</LinearLayout>
```

Strings



```
<?xml version="1.0" encoding="utf-8"?>
<resources>

    <string name="app_name">Incrementer</string>
    <string name="increment">Increment</string>
</resources>
```

```
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_weight="1">

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:onClick="increment"
    android:text="@string/increment" />

</RelativeLayout>
```

Activity

- Methode voor click event
- Counter
- View van counter

```
package com.example.incrementer;

import android.app.Activity;

public class MainActivity extends Activity {

    private int counter = 0;
    private TextView counterView;

    // Called when Activity is created (visible)
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // Call to set layout
        setContentView(R.layout.activity_main);

        // Obtain reference to view
        counterView = (TextView) this.findViewById(R.id.counter);
    }

    // Called when button is clicked
    public void increment(View v)
    {
        counterView.setText(""+(++counter));
    }
}
```

Problemen

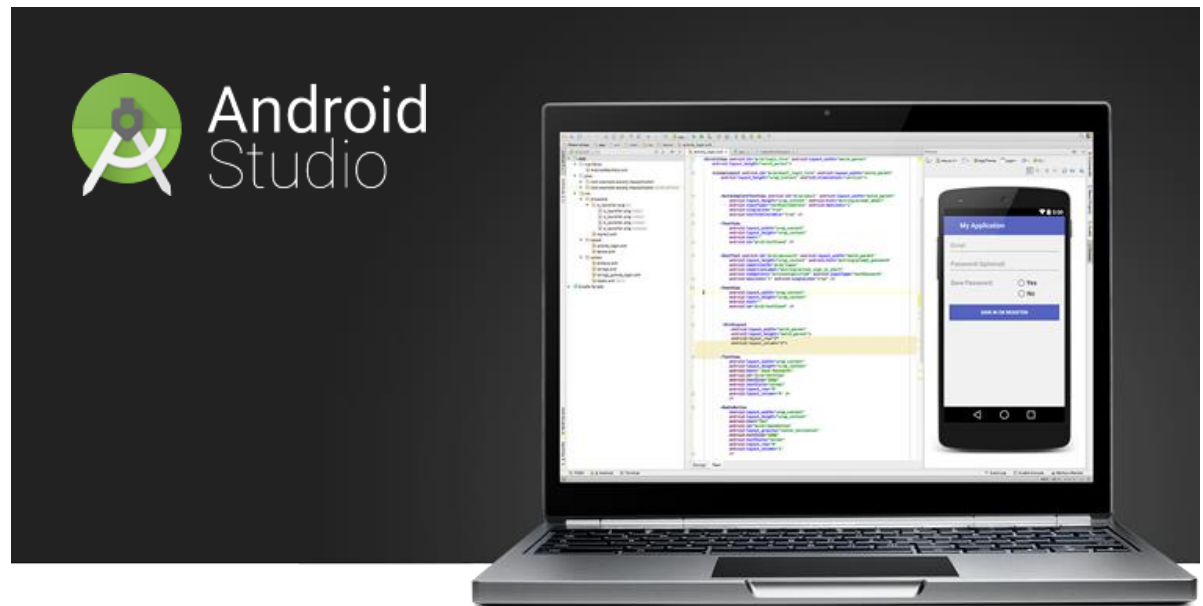
- Geen resetknop
- Zodra de app wordt gekanteld gaat de counter op 0.
 - Waarom?

Morgen om 10:45

- **Opstarten**
- **Aan de slag!**
 - Eigen laptop gebruiken?
 - Installeer vast alle programma's!
 - Zie volgende slides

Android Studio

<http://developer.android.com/sdk/index.html>



Eclipse plugin

<http://developer.android.com/sdk/installing/installing-adt.html>

Android | Handige links

- **Uitleg**

- <http://developer.android.com>
- <http://developer.android.com/training/>
- <http://developer.android.com/guide/>

- **API**

- <http://developer.android.com/reference/>

- **Specifieke problemen**

- *stackoverflow.com (via google)*

[1] *Nexus 5 en nexus 7*

<http://developer.android.com/design/index.html>

[2] *Verdeling Android versies*

<http://developer.android.com/about/dashboards/index.html>

[3] *Activity lifecycle*

<http://developer.android.com/guide/components/activities.html>

[4] *Fragment design*

<http://developer.android.com/guide/components/fragments.html>