

Android Programming

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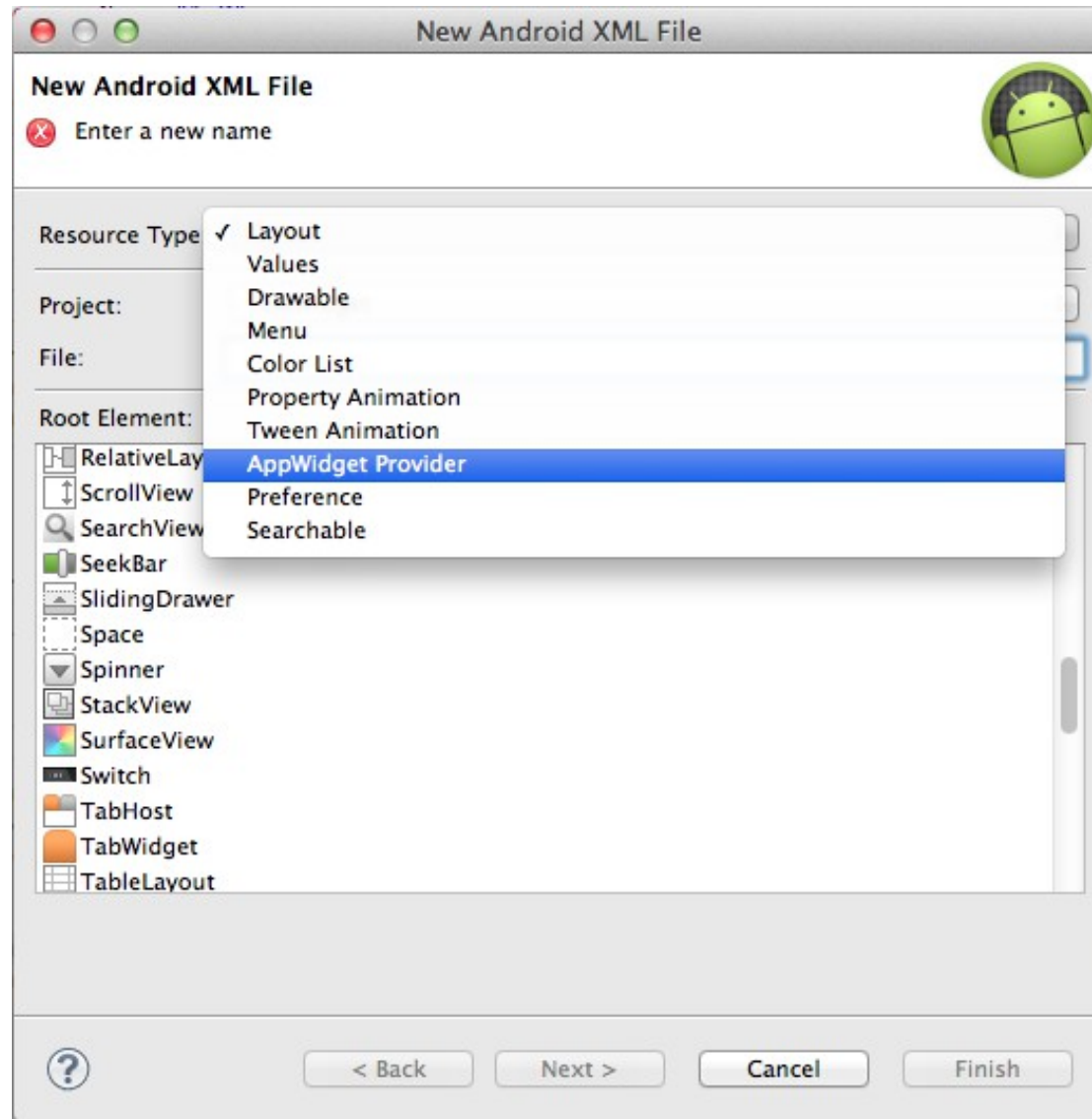
Widget

Hello Widget : AndroidManifest.xml

```
<manifest>
  <application>
    <receiver
      android:name=".MyWidgetProvider"
      android:label="My Widget" >
      <intent-filter>
        <action
          android:name="android.appwidget.action.APPWIDGET_UPDATE" />
        </intent-filter>

        <meta-data
          android:name="android.appwidget.provider"
          android:resource="xml/my_widget_info" />
      </receiver>
```

Hello Widget : /res/xml/my_widget_info.xml



Hello Widget : /res/xml/my_widget_info.xml

```
<?xml version="1.0" encoding="utf-8"?>
<appwidget-provider
xmlns:android="http://schemas.android.com/apk/res/android"
  android:initialLayout="@layout/my_widget"
  android:minHeight="72dp"
  android:minWidth="294dp"
  android:updatePeriodMillis="1800000" >
</appwidget-provider>
```

>=30 minutes, onUpdate()

height, width = (#cells * 74) - 2

Hello Widget : /res/layout/my_widget.xml

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

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    android:layout_margin="4dp"  
    android:gravity="center"  
    android:orientation="vertical" >
```

```
    <TextView
```

```
        android:id="@+id/textview1"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content" />
```

```
</LinearLayout>
```

- FrameLayout
- LinearLayout
- RelativeLayout
- AnalogClock
- Button
- Chronometer
- ImageButton
- ImageView
- ProgressBar
- TextView
- ViewFlipper

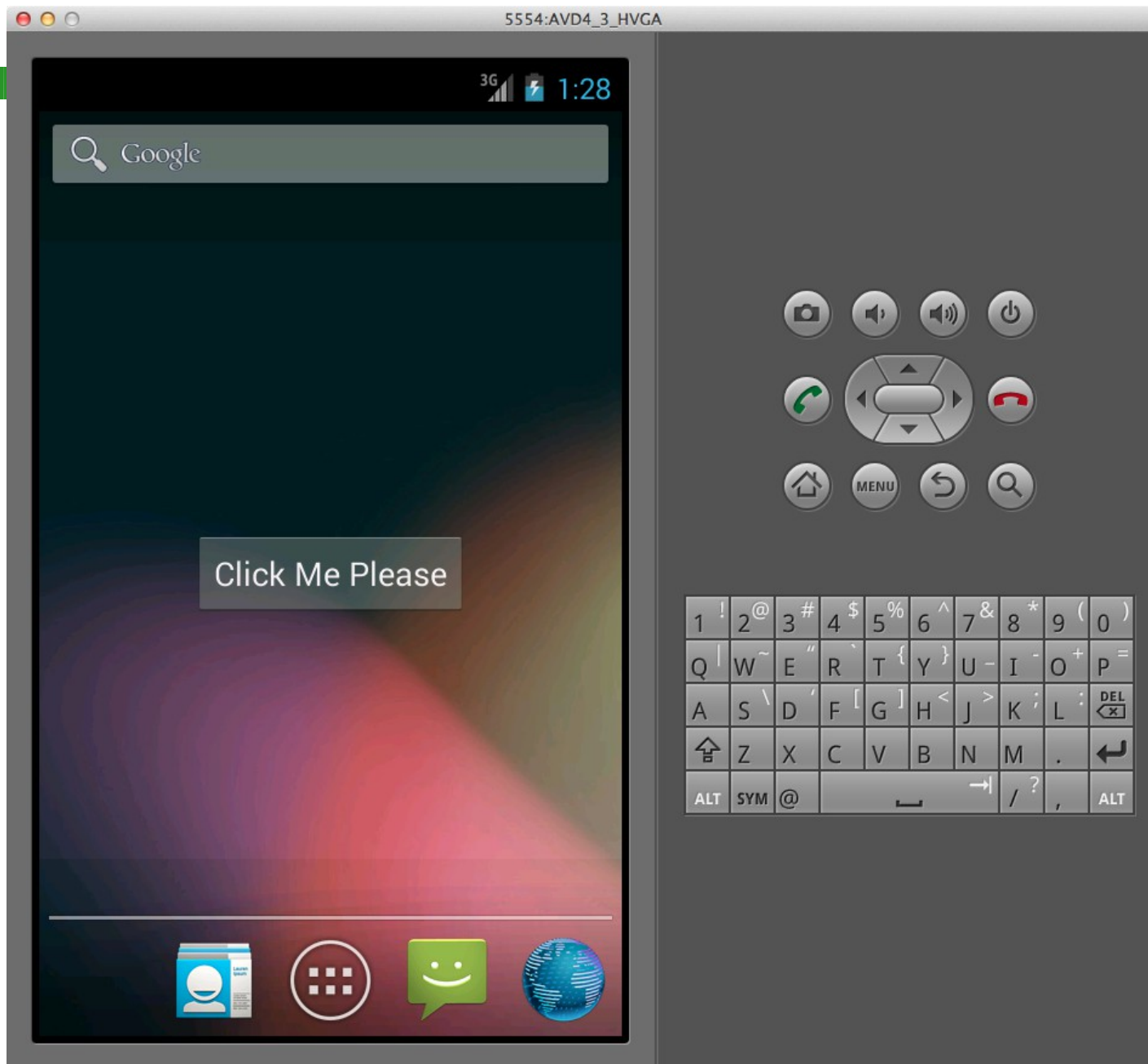
Hello Widget : MyWidgetProvider.java

```
package com.example.testwidget;
```

```
import ...
```

```
public class MyWidgetProvider extends AppWidgetProvider {  
    @Override  
    public void onUpdate(Context context,  
                          AppWidgetManager appWidgetManager,  
                          int[] appWidgetIds) {  
        RemoteViews views = new RemoteViews(context.getPackageName(),  
                                             R.layout.my_widget);  
  
        views.setTextViewText(R.id.textview1, "hello");  
        appWidgetManager.updateAppWidget(appWidgetIds[0], views);  
    }  
}
```

Click



Click

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_margin="4dp"
    android:gravity="center"
    android:orientation="vertical" >

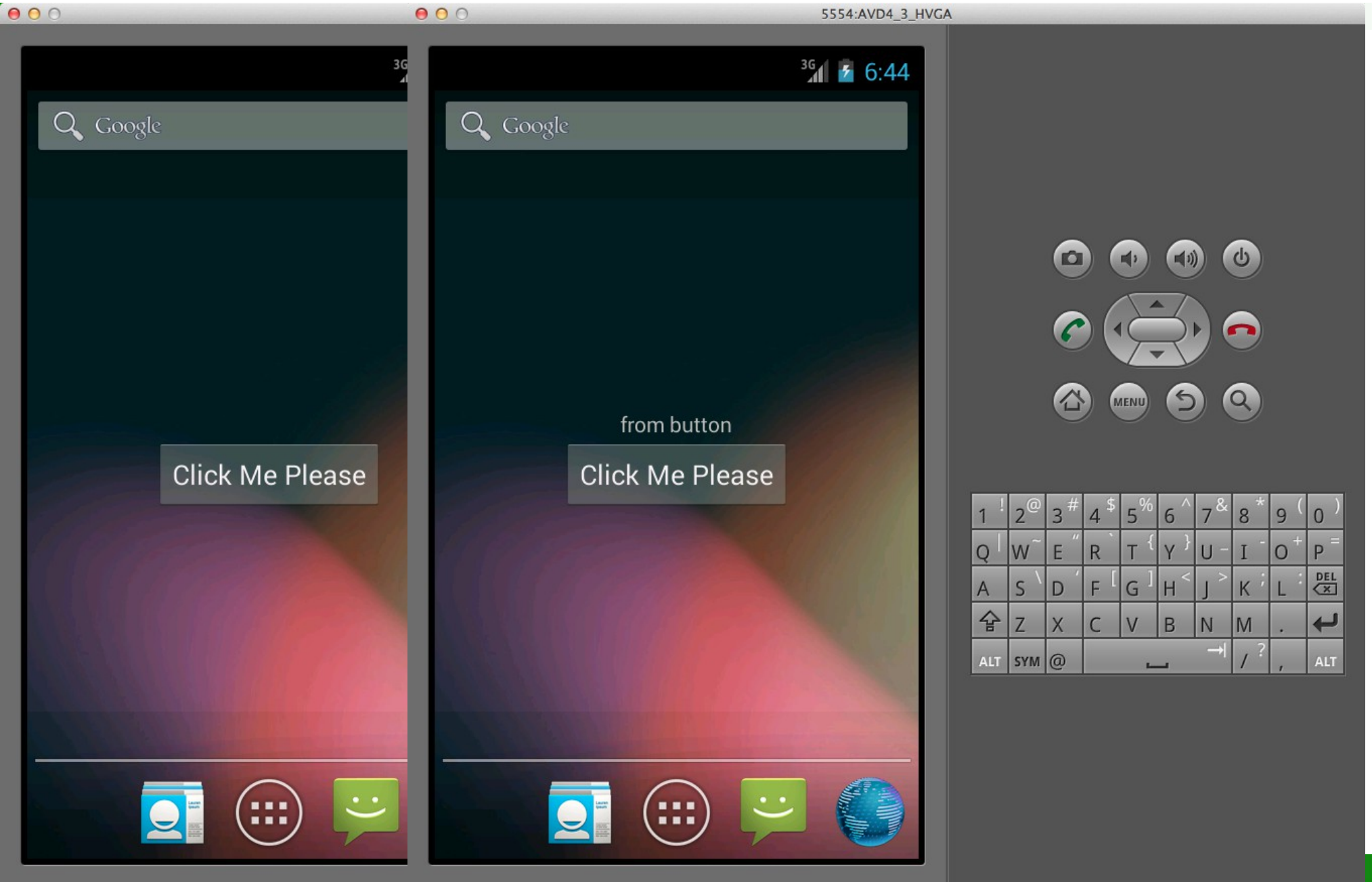
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click Me Please" />

</LinearLayout>
```

Click Widget : MyWidgetProvider.java

```
public class MyWidgetProvider extends AppWidgetProvider {  
  
    @Override  
    public void onUpdate(Context context, AppWidgetManager appWidgetManager,  
        int[] appWidgetIds) {  
        Intent intent = new Intent(Intent.ACTION_VIEW,  
            Uri.parse("http://cnn.com"));  
        PendingIntent pendingIntent = PendingIntent.getActivity(context, 0,  
            intent, 0);  
  
        RemoteViews rvs = new RemoteViews(context.getPackageName(),  
            R.layout.my_widget);  
        rvs.setOnClickPendingIntent(R.id.button1, pendingIntent);  
  
        appWidgetManager.updateAppWidget(appWidgetIds[0], rvs);  
    }  
}
```

Click



Click

```
<?xml version="1.0" encoding="utf-8"?>
<manifest>
  <application>
    <receiver
      android:name=".MyWidgetProvider"
      android:label="My Widget" >
      <intent-filter>
        <action
          android:name="android.appwidget.action.APPWIDGET_UPDATE" />
        <action
          android:name="com.example.testwidget.CLICK_WIDGET_ACTION" />
      </intent-filter>

      <meta-data
        android:name="android.appwidget.provider"
        android:resource="@xml/my_widget_info" />
    </receiver>
    ...
  </application>
</manifest>
```

Click

```
public class MyWidgetProvider extends AppWidgetProvider {
    @Override
    public void onUpdate(Context context, AppWidgetManager appWidgetManager,
        int[] appWidgetIds) {
        Log.i(TAG, "on update");
        for (int i = 0; i < appWidgetIds.length; i++) {
            Intent intent = new Intent(context, MyWidgetProvider.class);

            intent.setAction(CLICK_WIDGET_ACTION);
            intent.putExtra(AppWidgetManager.EXTRA_APPWIDGET_IDS, appWidgetIds);
            intent.putExtra("msg", "from button");
            PendingIntent pendingIntent = PendingIntent.getBroadcast(context, 0,
                intent, PendingIntent.FLAG_UPDATE_CURRENT);

            RemoteViews remoteViews = new RemoteViews(context.getPackageName(),
                R.layout.my_widget);
            remoteViews.setOnClickPendingIntent(R.id.button1, pendingIntent);
            appWidgetManager.updateAppWidget(appWidgetIds[i], remoteViews);
        }
    }
}
```

Click

```
public class MyWidgetProvider extends AppWidgetProvider {
    @Override
    public void onReceive(Context context, Intent intent) {
        super.onReceive(context, intent);
        Log.i(TAG, "on receive");

        if (intent.getAction().equals(CLICK_WIDGET_ACTION)) {
            RemoteViews remoteViews = new RemoteViews(context.getPackageName(),
R.layout.my_widget);
            remoteViews.setTextViewText(R.id.textview1, intent.getStringExtra("msg"));

            ComponentName myWidget = new ComponentName(context, MyWidgetProvider.class);
            AppWidgetManager manager = AppWidgetManager.getInstance(context);
            manager.updateAppWidget(myWidget, remoteViews);
        }
    }
}
```

Click

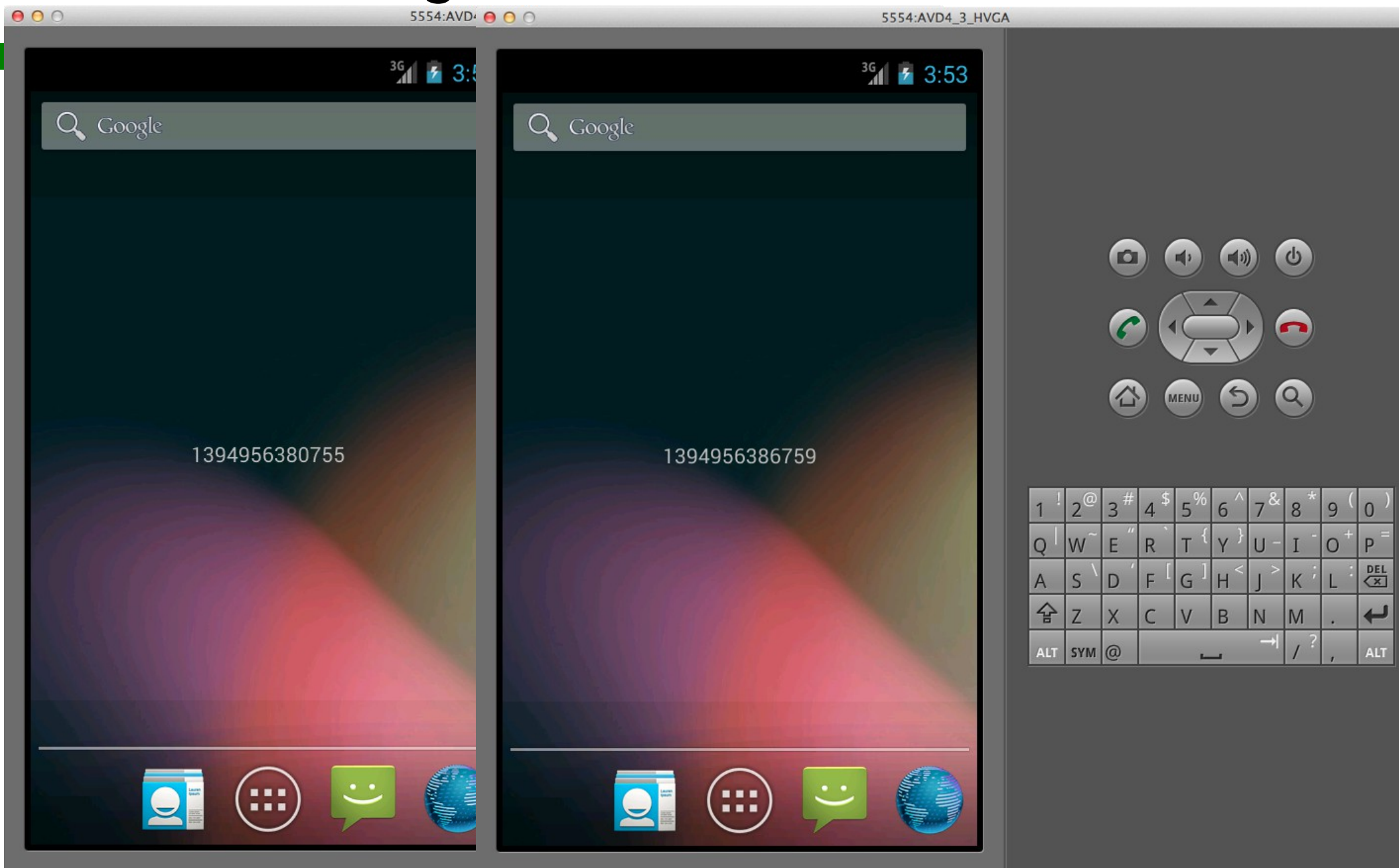
laration Console LogCat Debug

tag:wi

verbose

Level	Time	PID	TID	Application	Tag	Text
I	03-16 06:23:01.215	296	296	system_process	WindowState	WIN DEATH: Window{41977f48 u0 com.example.testwidget/com.example.testwidget.MainActivity}
W	03-16 06:23:01.254	296	307	system_process	WindowManager	Screenshot failure taking screenshot for (246x410) to layer 21010
W	03-16 06:23:04.884	296	496	system_process	WindowManager	Screenshot failure taking screenshot for (246x410) to layer 21015
W	03-16 06:23:04.904	296	307	system_process	WindowManager	Screenshot failure taking screenshot for (246x410) to layer 21015
W	03-16 06:23:05.115	296	339	system_process	WindowManager	Screenshot failure taking screenshot for (246x410) to layer 21015
I	03-16 06:23:17.154	4995	4995	com.example.testw...	widget	on receive
I	03-16 06:23:17.344	4995	4995	com.example.testw...	widget	on update
I	03-16 06:23:17.685	4995	4995	com.example.testw...	widget	on receive

Clock Widget :



Clock Widget : manifest

```
<manifest>
  <application>
    <receiver
      android:name=".MyWidgetProvider"
      android:label="My Widget" >
      <intent-filter>
        <action
          android:name="android.appwidget.action.APPWIDGET_UPDATE" />
        <action
          android:name="com.example.testwidget.MY_UPDATE" />
      </intent-filter>

      <meta-data
        android:name="android.appwidget.provider"
        android:resource="@xml/my_widget_info" />
    </receiver>

    ...
  </application>
  ...
</manifest>
```

Clock Widget :

```
public class MyWidgetProvider extends AppWidgetProvider {  
    // same as in the manifest  
    public static final String CLOCK_WIDGET_UPDATE =  
        "com.example.testwidget.MY_UPDATE";  
  
    public static final int INTERVAL = 1000;  
    public PendingIntent pendingIntent;
```

Clock Widget :

```
public class MyWidgetProvider extends AppWidgetProvider {
    @Override
    public void onEnabled(Context context) {
        super.onEnabled(context);
        Log.d(TAG, "on enabled: first widget is created");

        AlarmManager alarmManager = (AlarmManager) context
            .getSystemService(Context.ALARM_SERVICE);
        alarmManager.setRepeating(AlarmManager.RTC, System.currentTimeMillis(),
            INTERVAL, getPendingIntent(context));
    }

    @Override
    public void onDisabled(Context context) {
        super.onDisabled(context);
        Log.d(TAG, "on disabled: last widget is deleted");

        AlarmManager alarmManager = (AlarmManager) context
            .getSystemService(Context.ALARM_SERVICE);
        alarmManager.cancel(getPendingIntent(context)); // must be a new object
    }
}
```

Clock Widget :

```
public class MyWidgetProvider extends AppWidgetProvider {
    private PendingIntent getPendingIntent(Context context) {
        Intent intent = new Intent(CLOCK_WIDGET_UPDATE);
        PendingIntent pendingIntent = PendingIntent.getBroadcast(
            context, 0,
            intent, PendingIntent.FLAG_UPDATE_CURRENT);
        return pendingIntent;
    }
}
```

Clock Widget :

```
public class MyWidgetProvider extends AppWidgetProvider {
    @Override
    public void onReceive(Context context, Intent intent) {
        super.onReceive(context, intent);
        Log.d(TAG, "on receive: " + intent);
        if (intent.getAction().equals(CLOCK_WIDGET_UPDATE)) {
            Log.d(TAG, "Clock update");

            ComponentName thisAppWidget = new ComponentName(context.getPackageName(),
                getClass().getName());
            AppWidgetManager appWidgetManager = AppWidgetManager.getInstance(context);
            int ids[] = appWidgetManager.getAppWidgetIds(thisAppWidget);
            for (int appWidgetId : ids) {
                updateAppWidget(context, appWidgetManager, appWidgetId);
            }
        }
    }
}
```

Clock Widget :

```
public class MyWidgetProvider extends AppWidgetProvider {  
  
    private void updateAppWidget(Context context,  
        AppWidgetManager appWidgetManager, int appWidgetId) {  
        Log.i(TAG, "update app widget");  
  
        RemoteViews remoteViews = new RemoteViews(context.getPackageName(),  
            R.layout.my_widget);  
        remoteViews.setTextViewText(R.id.textview1, "" + System.currentTimeMillis());  
        appWidgetManager.updateAppWidget(appWidgetId, remoteViews);  
    }  
}
```