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Android Technology
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Jan 2014, Chicago

NASDAQ: IMMR

**Putting Real Feeling
Into Android apps!**

■ Agenda

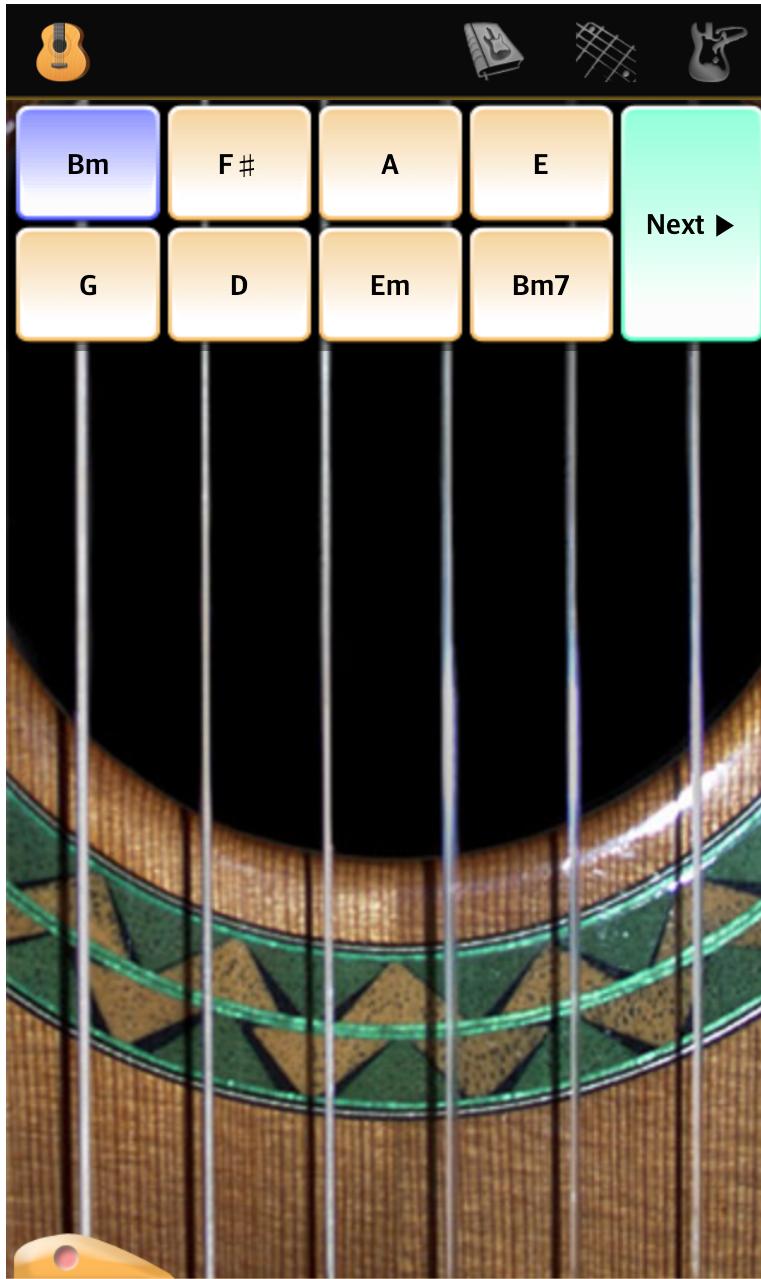
- 1 Haptics
- 2 Creating a new project
- 3 Linking to a 3rd party Library
- 4 Running your code on a phone
- 5 Wrap up

1 Haptics

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The Mobile User





Solo!

Touch feedback fills the human need for tactile gratification



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Android API levels

<http://goo.gl/LuNCDG>



API level	Android ver.	Name	Date
1	1.0		9.2008
2	1.1	Petit Four	2.2009
3	1.5	Cupcake	4.2009
4	1.6	Donut	9.2009
5	2.0	Eclair	10.2009
6	2.01	Eclair	
7	2.1	Eclair	
8	2.2.x	Froyo	5.2010
9	2.3 - 2.3.2	Gingerbread	12.2010
10	2.3.3 - 2.3.7	Gingerbread	
11	3.0	Honeycomb	2.2011
12	3.1	Honeycomb	
13	3.2	Honeycomb	
14	4.0 - 4.0.2	Ice Cream Sand.	12.2011
15	4.0.3 - 4.0.4	Ice Cream Sand.	
16	4.1	Jelly Bean	7.2012
17	4.2	Jelly Bean	11.2012
18	4.3	Jelly Bean	7.2013
19	4.4	KitKat	10.2013

Choosing Android API levels

It's a tradeoff

- You want the oldest possible API because – more phones will run your app
- You want the newest possible API because – better quality, better performance, widest range of new features

Review market share of different API levels

<http://goo.gl/219Br4>

API level 14 is a good choice at present, but will fade out.

Create new project - Exercise

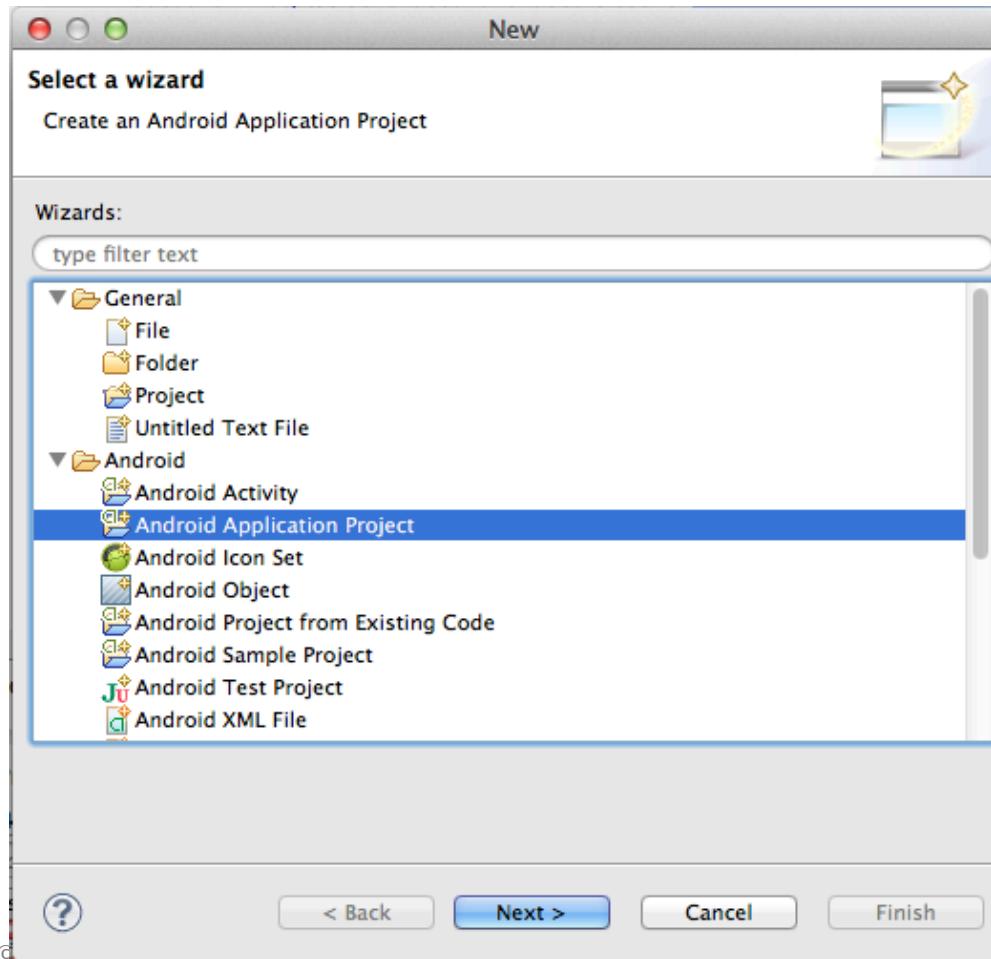
To create a new Android project in Eclipse

1. start Eclipse
2. select File > New > Project.
3. expand “Android”, then click > Android Application Project, and click Next.
4. enter Application Name: ***Hello***.
5. Enter Project Name: ***Helloworld***
7. Package name: ***com.example.helloworld***.
6. Select Min Reqd SDK: “API 14 Android 4.0”
7. Select Target SDK: “API 14”
9. Compile with: “API 19” or any ≥ 14 where you have downloaded that platform Then hit “Next”
10. on “New Android App” uncheck “custom launcher icon”, click “Next”
11. on “Create Activity”, click “Next”.
12. Click *Finish*.

Create new project step 2 - 3

2. select File > New > Project...

3. expand "Android", click > Android Application Project, click Next.



Create a new Android project

- File > New > Android Project using Eclipse + ADT

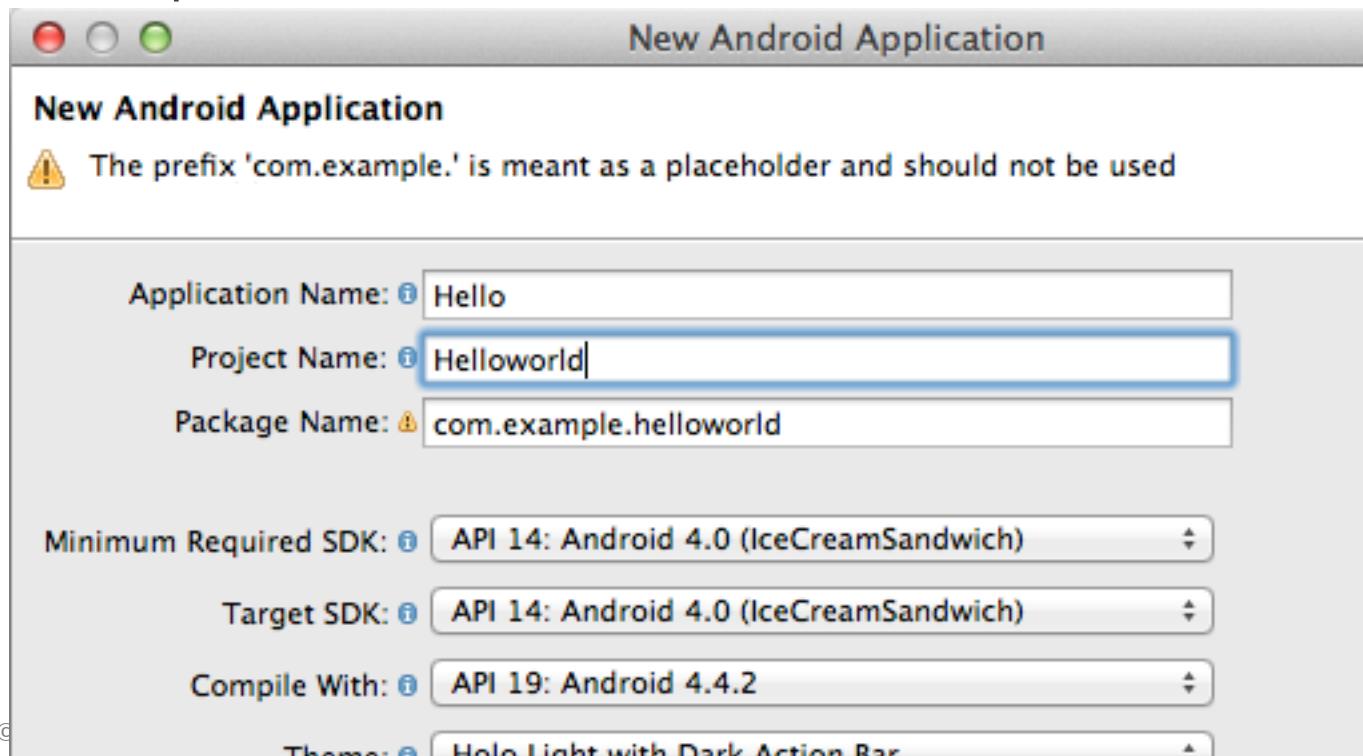
Field	Purpose	Value to use
Project name	What Eclipse calls this app	Hello
Target	API level this app uses	14
App name	what phone calls the app	Hello
Package name	what Java calls the app	com.example.hello
Activity name	The file containing main	MainActivity
Min SDK version	API level this app uses	14

You must have installed the platform file for “target” and “min-sdk” level that you choose. This is part of installing the Eclipse bundle. Platforms live in the SDK & have names like “platform-14”



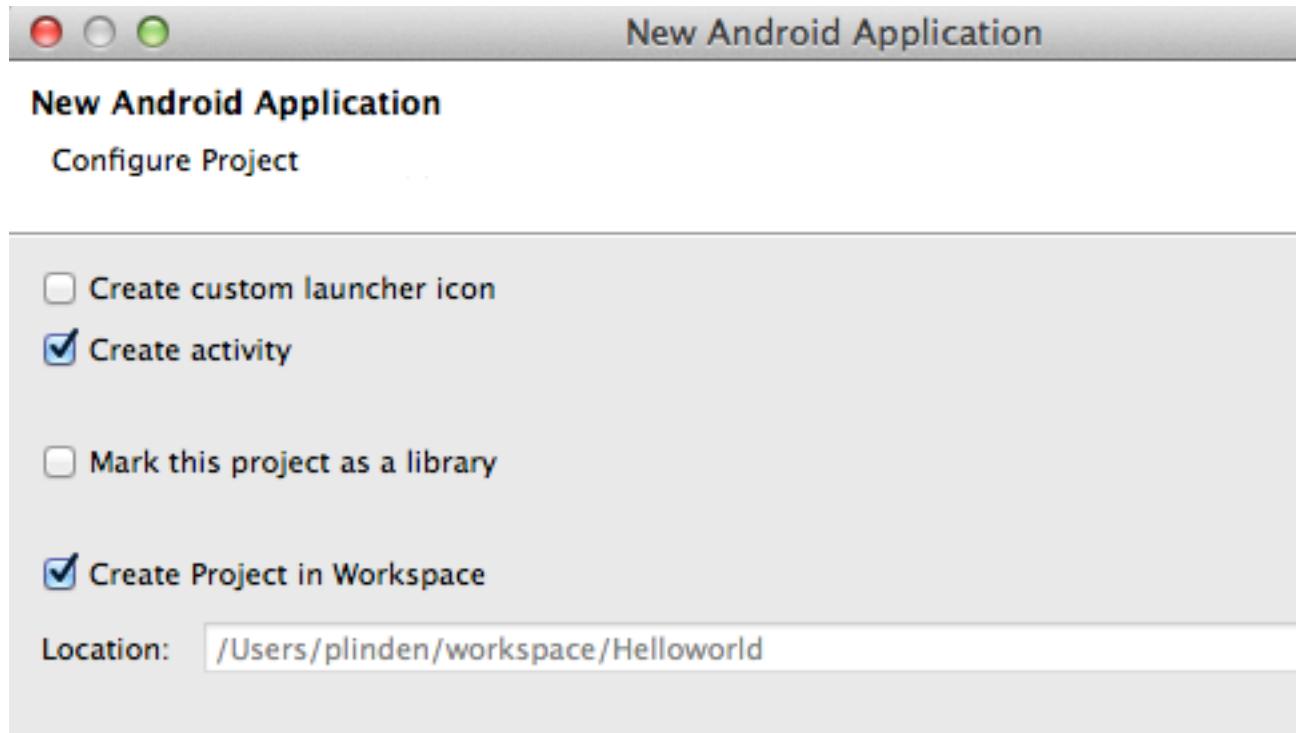
Create new project step 4 - 9

4. enter Application Name: ***Hello***.
5. Enter Project Name: ***Helloworld***
7. Package name: ***com.example.helloworld***.
6. Select Min Reqd SDK: “API 14 Android 4.0”
7. Select Target SDK: “API 14”
9. Compile with: “API 14” or any ≥ 14 where you have downloaded that platform Then hit “Next”



Create new project step 10

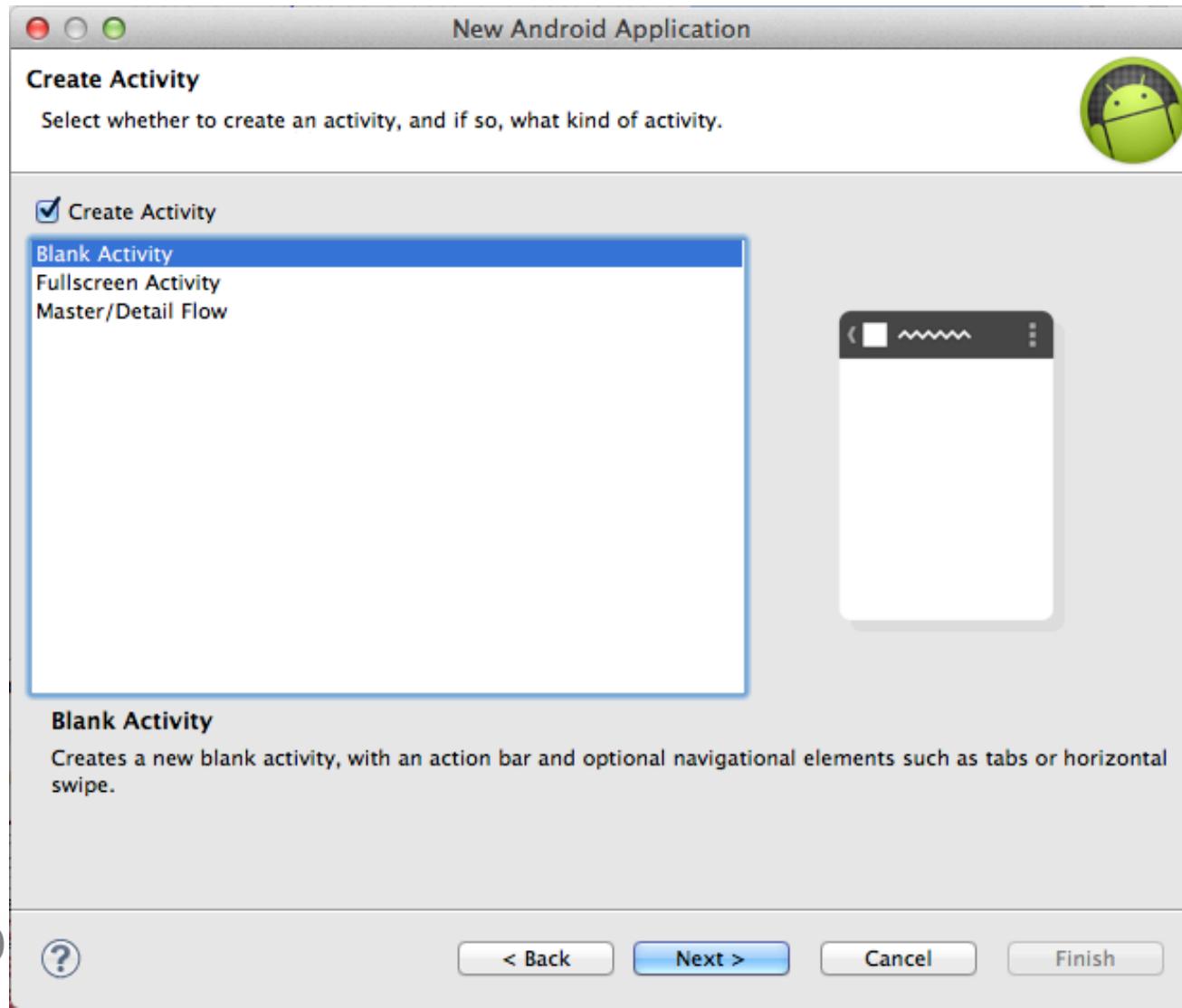
10. on “New Android App,” uncheck “custom launcher icon”, click “Next”



Create new project step 11

11. on “Create Activity”, click “Next”.

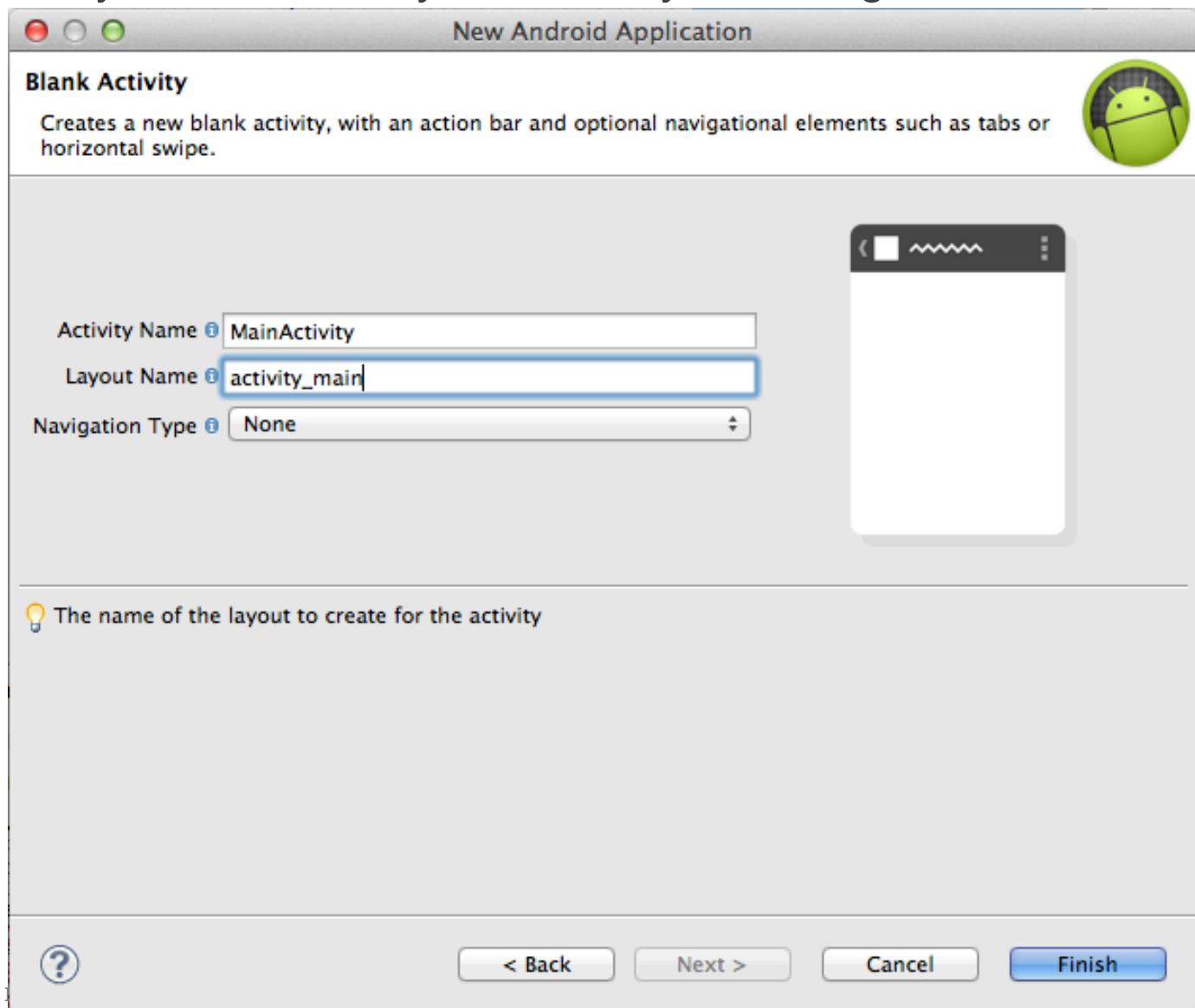
12. Click *Finish*.



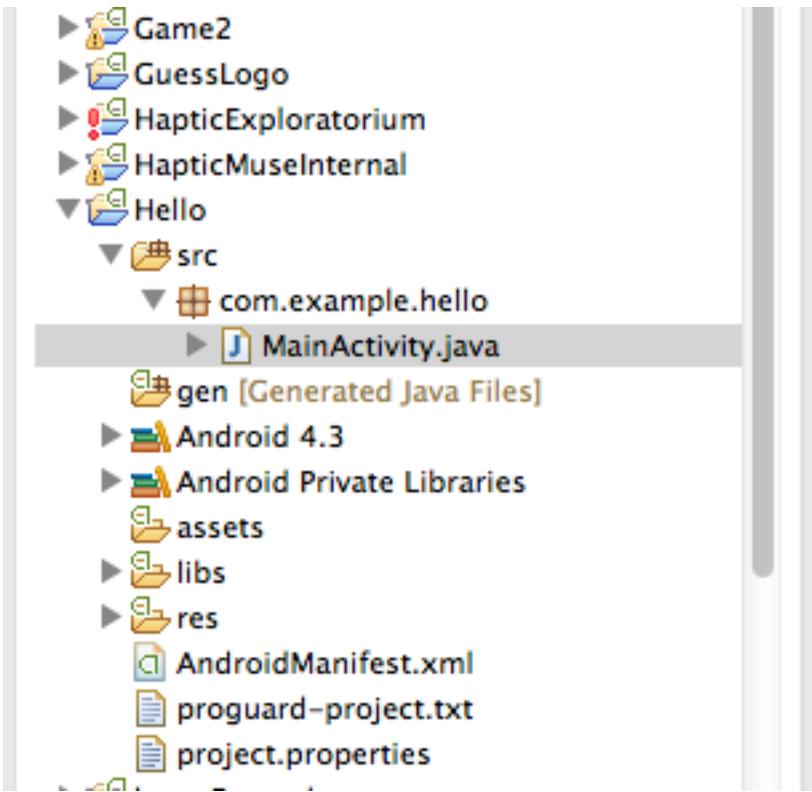
Create new project step 12

12. Note the “Activity name” and “layout name” you were given.

Click *Finish*.



New project appears in Eclipse



You can expand folders by clicking right pointing triangle

If project has errors, click Project > Clean > OK

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Downloading the Immersion Haptic Platform

Immersion Haptic SDK Tools:

www.immersion.com/haptic/sdk

- Download the Haptic SDK (450KB)
- Download the Haptic Studio
(only for advanced custom effect design)



Haptic Effects Quick Start Guide:

www.immersion.com/haptic/guide

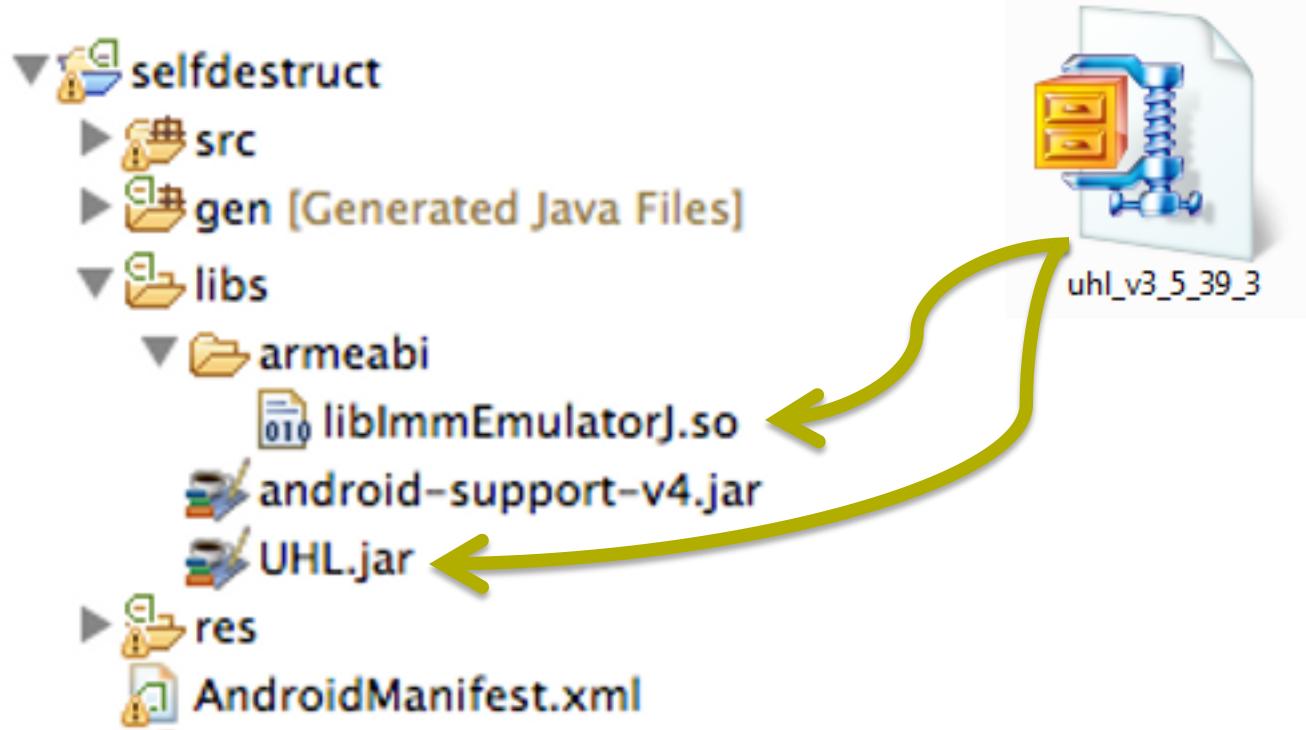
Immersion Haptic Effect Preview App

- Download FREE from Google Play



Add Haptics to “Hello World!” Project

- Download UHL zip file
- Copy extracted **libImmEmulatorJ.so** file to **libs/armeabi** folder (create folders if necessary)
- Copy extracted **UHL.jar** to **libs**



Add a Button

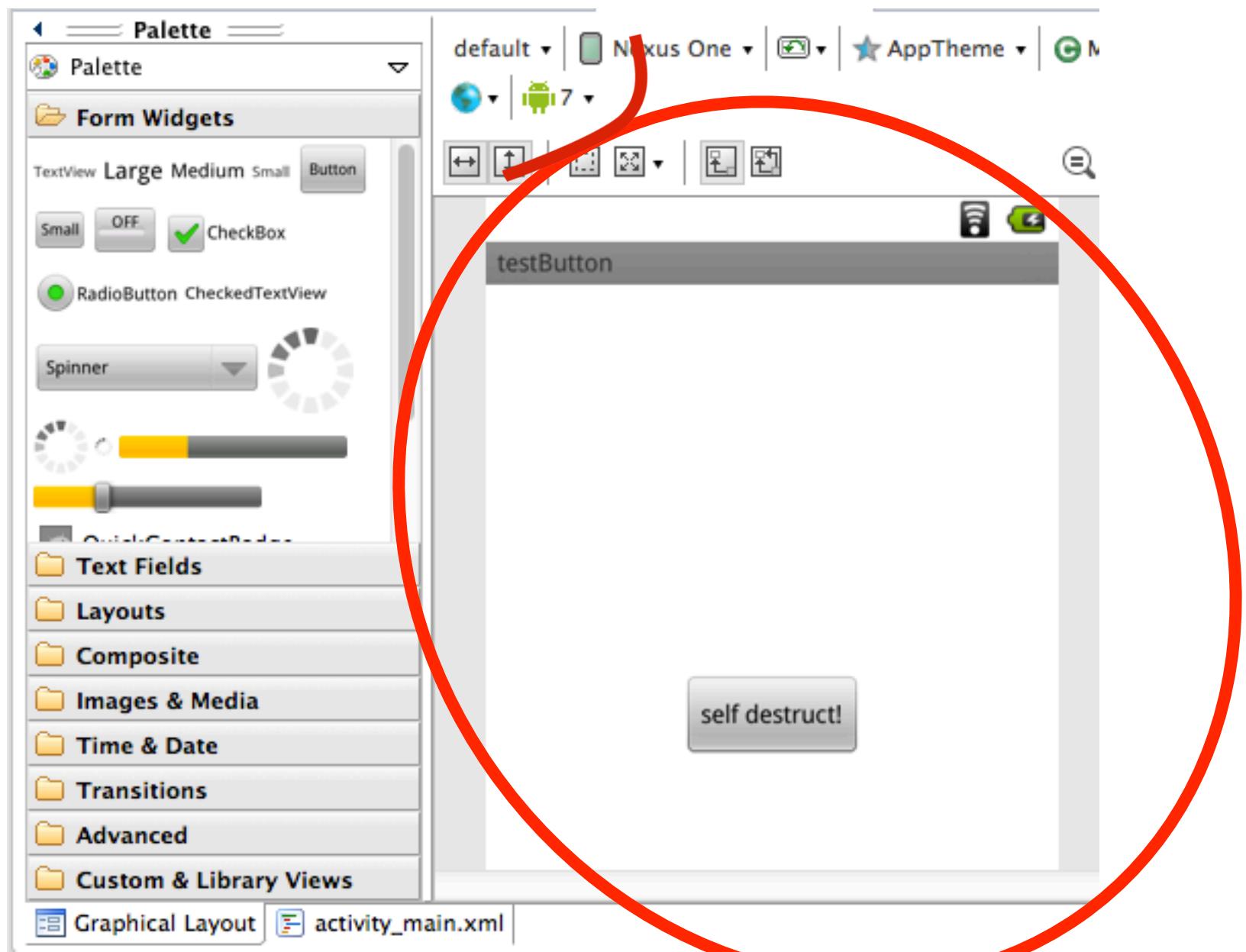
in res/layout/activity_main.xml

```
<Button TextView
    android:text="play effect!"
    android:onClick="handleClick"
/>
```

in src/... MainActivity.java

```
import android.view.View;

public void handleClick(View v) { }
```



Add Vibrate permission

in top level AndroidManifest.xml

```
<manifest xmlns:android= ...      />

<uses-permission
    android:name="android.permission.VIBRATE" />

<application android:icon=
    <activity>
        </activity>
    </application>

</manifest>
```

Add Import Statement

Import the UHL classes into your Activity

in src/... MainActivity.java

```
import com.immersion.uhl.*;
```

Instantiate Launcher object

in src/... MainActivity.java

```
public class MainActivity extends Activity {  
  
    Launcher haptic;  
  
    @Override  
    public void onCreate(Bundle b) {  
        super.onCreate(b);  
        haptic = new Launcher(this);  
    }  
}
```

Use the Haptic Effect Preview App



4G 4:07

Haptic Effect Preview

Explosions

```
// play a vibration effect
try { launcher.play(79); }
catch (RuntimeException re) {}
```

Launcher.EXPLOSION4

Launcher.EXPLOSION5

Launcher.EXPLOSION6

Launcher.EXPLOSION7

M

The image shows a screenshot of the "Haptic Effect Preview" app running on an Android device. The title bar displays the app name and the current time (4:07). The screen lists several haptic effect options, each represented by a yellow square icon containing a black starburst symbol. The first option is labeled "Explosions" and includes a Java code snippet for playing a vibration effect. Below it are four additional options labeled "Launcher.EXPLOSION4", "Launcher.EXPLOSION5", "Launcher.EXPLOSION6", and "Launcher.EXPLOSION7". At the bottom of the list is a partially visible icon for another effect. The top of the screen shows the standard Android navigation icons (back, home, recent apps).

Play Effect



124 int constants

```
public static final int BOUNCE_100 = 0;
```

...

```
public static final int EXPLOSION7= 79;
```

```
public static final int ENGINE4_33
```

```
haptic.play(Launcher.EXPLOSION7);
```

Stop any rendering when app Pauses

in src/... MainActivity.java

```
@Override  
protected void onPause() {  
    super.onPause();  
    haptic.stop();  
}
```



Harden the code



Build it right!

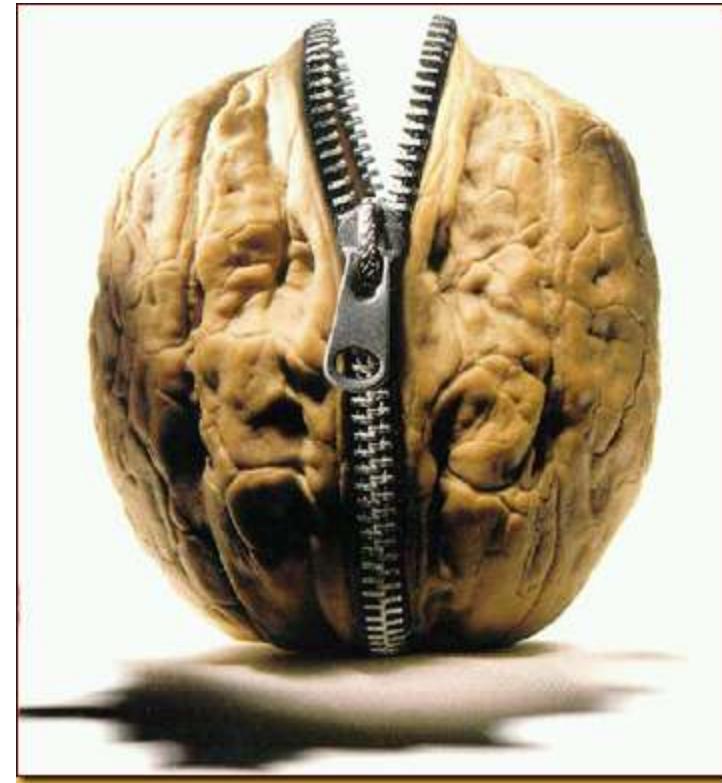


```
try {  
  
    haptic.play(Launcher.EXPLOSION7);  
  
} catch (RuntimeException e) {  
    Log.e("MyTestApp", e.getMessage());  
}
```

In a nutshell, that's it!

That's all you need to put haptics in your app

Now you can add cool pre-made haptic effects to your game applications.



Immersion Haptic SDK Plugins

- Unity3D plugin



- Marmalade plugin



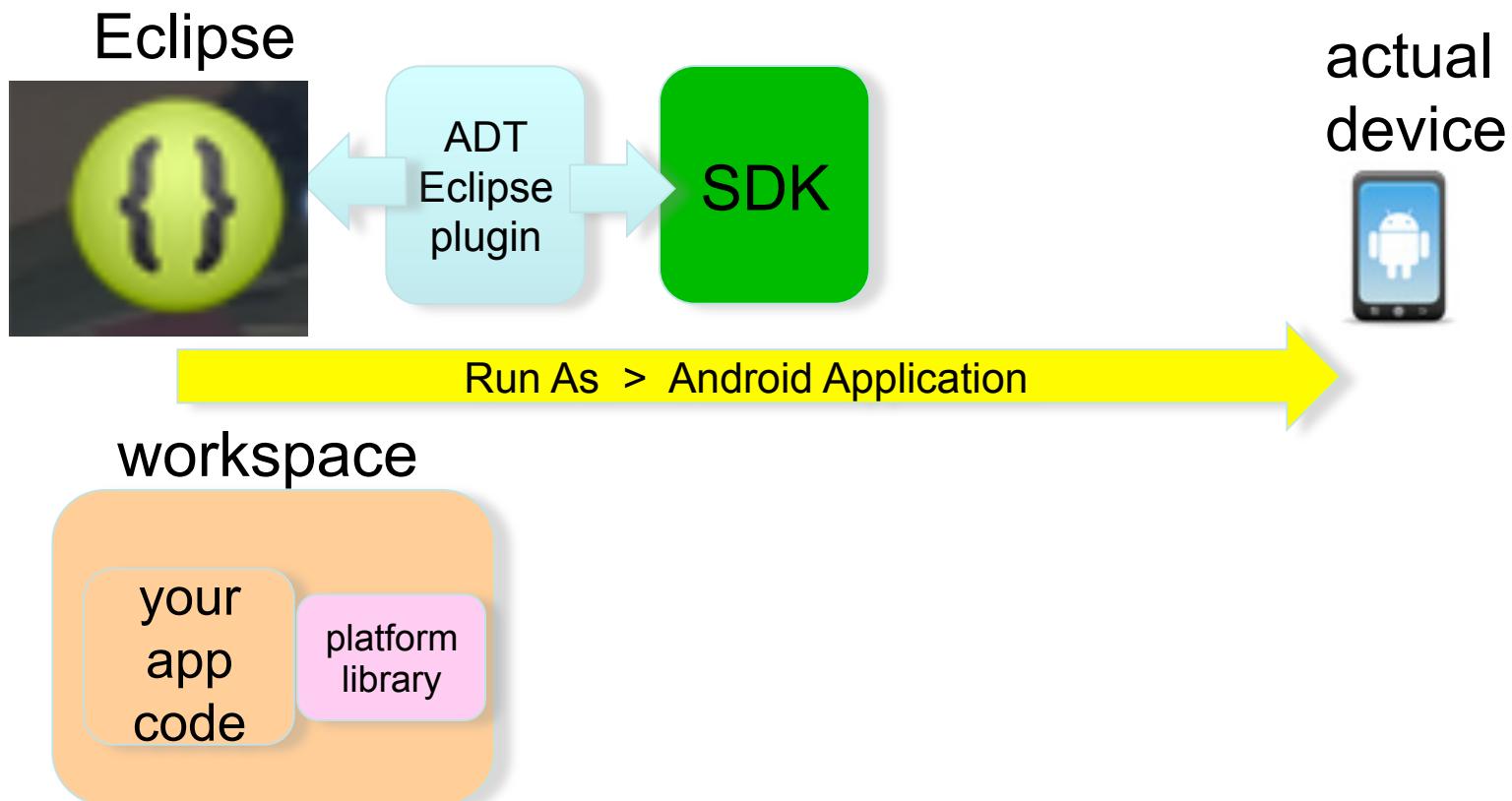
- YoYo Games



Plugins available at www.immersion.com/haptic/sdk

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One time set up – using phone/tablet



One time set up – PHONE / TABLET

Home > All Apps > Settings

- Applications > Development
 - Click “USB Debugging” & “Stay awake”
 - Different in Ice Cream Sandwich (Dev options)
 - Different in Jelly Bean (Hidden! click “build num” 7x)
- actual device



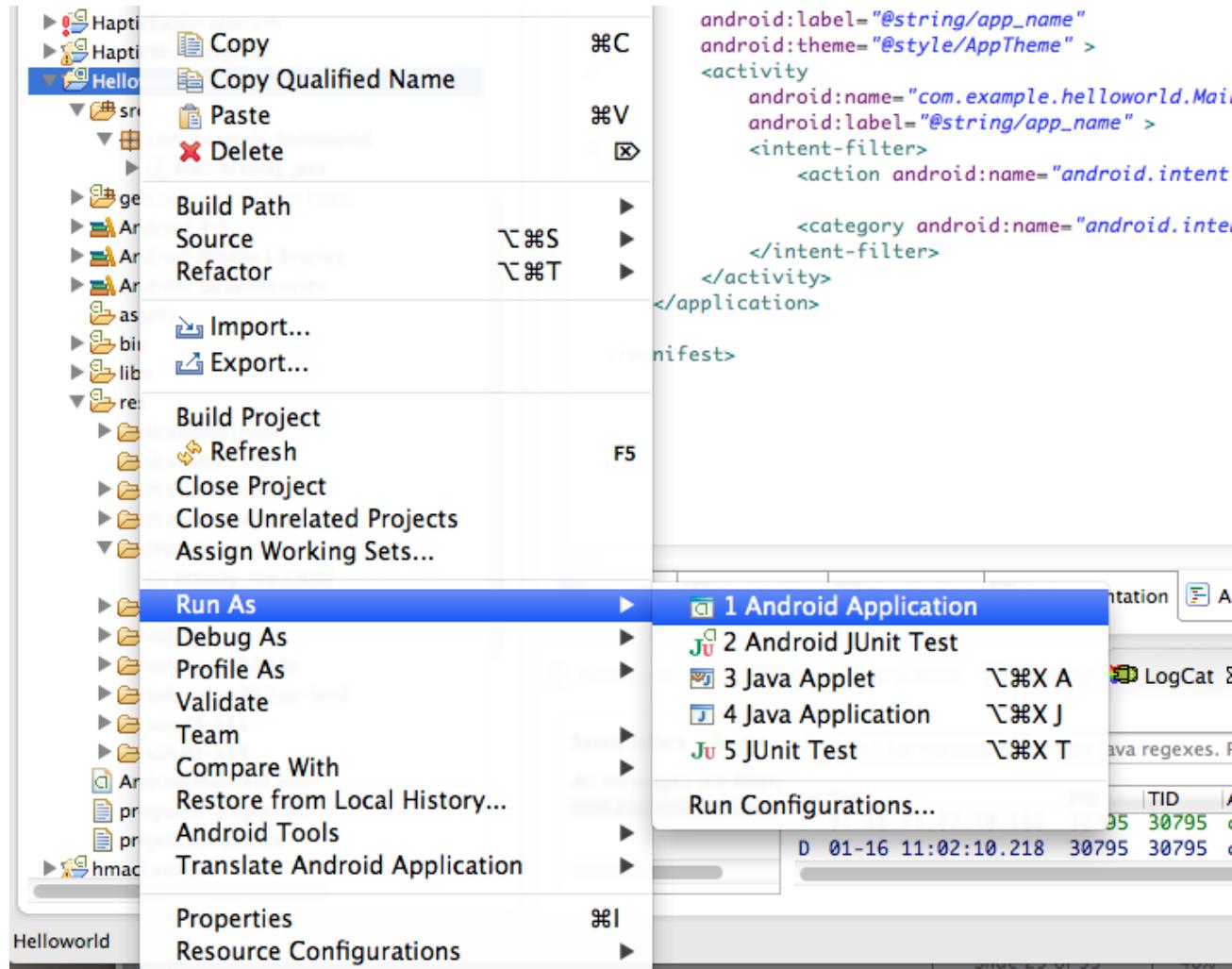
Pull down Notification Shade > USB Connection

- Click “Charge only”, “OK”

Connect the device to your devt PC with a micro USB cable

If using Windows, you need to install a driver on Windows. Get it from phone manufacturer's developer website.

Run app on phone / tablet



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Haptic Effect Preview App



- Free app on Google Play
- Feel each effect on any Android device
- **Code sample** provided for each effect
- **Awesome** on Android handsets with TouchSense installed by Samsung, LG, Toshiba, Pantech and others
- Emulates effects on all other Android devices without the TouchSense technology
 - Allows vibe effects not available with standard Google vibrate () method

Connect with Immersion



#HapticsDev



like "ImmersionDeveloper"



search "Immersion Corporation"

Some great Android resources

- <http://developer.android.com>
- <http://stackoverflow.com>
- Various meetups –
 - <http://www.meetup.com/Android-Career-Training-Chicago/>
 - <http://www.meetup.com/Newbie-Mobile-Developers/>
 - <http://www.momochicago.org/>
 - <http://www.meetup.com/chicago-google/>
- Have a great time with this!

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