

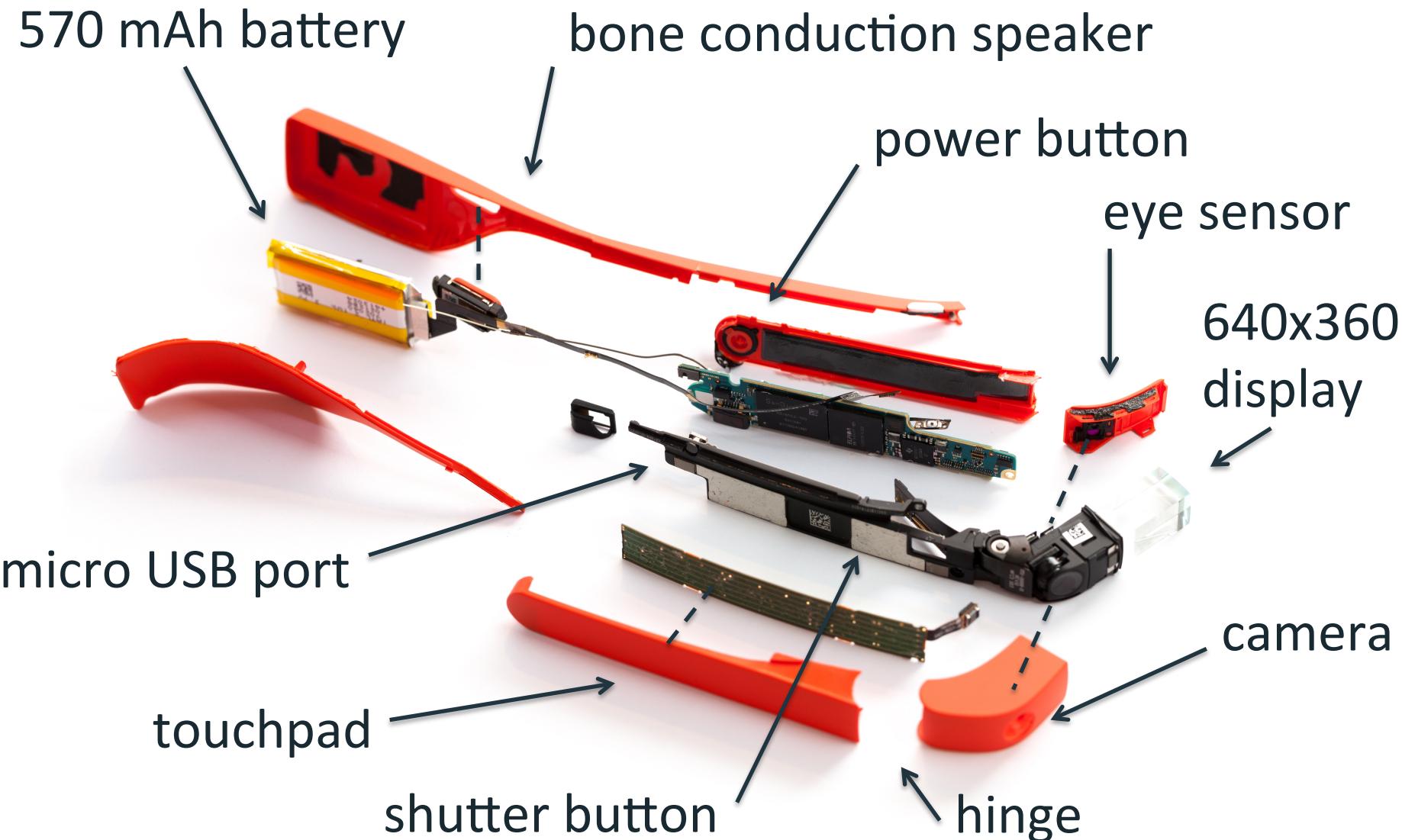


Native Development on Google Glass

 newcircle

Google Glass Hardware

catwig.com/google-glass-teardown



Google Glass UI

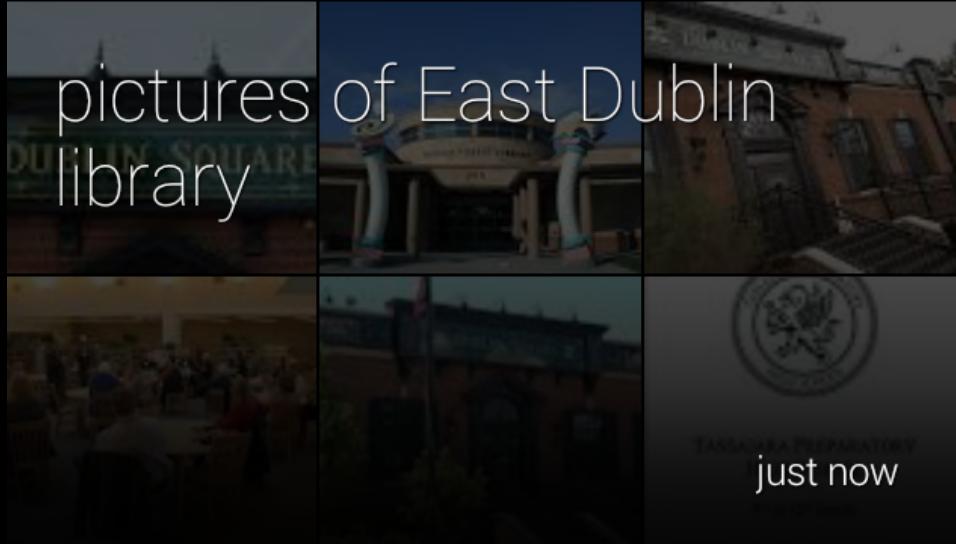
developers.google.com/glass/design/ui



Timeline Cards and Menus



mandalaytrans.com



pictures of East
Dublin library
g Show results

17 mins ago

pictures of East
Dublin library
Delete

17 mins

Voice Interaction

6:20

" ok glass "

ok glass, google...

take a picture

record a video

get directions to...

send a message to...

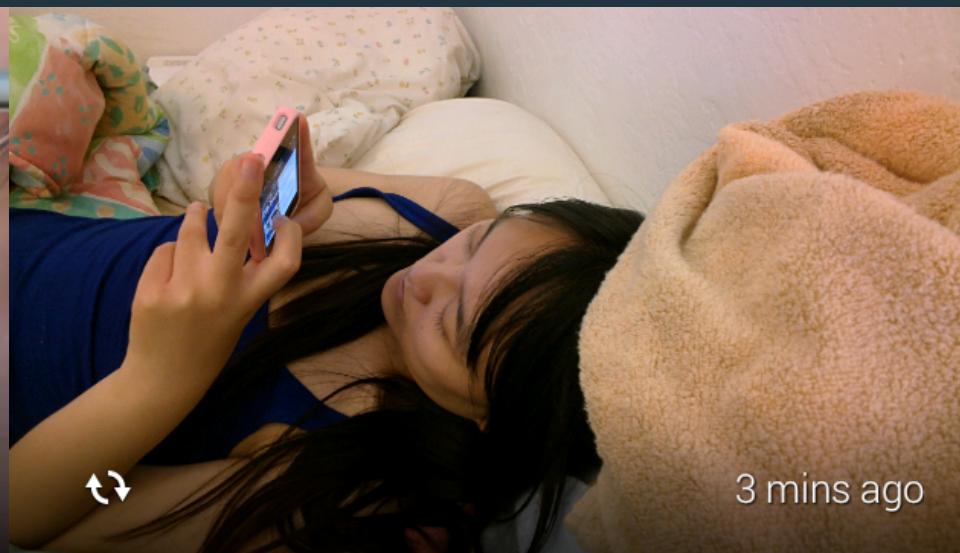
ok glass, google...
pictures of East Dublin library



Sensor Interaction

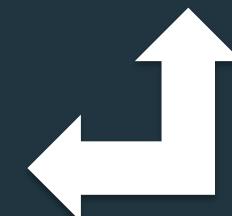
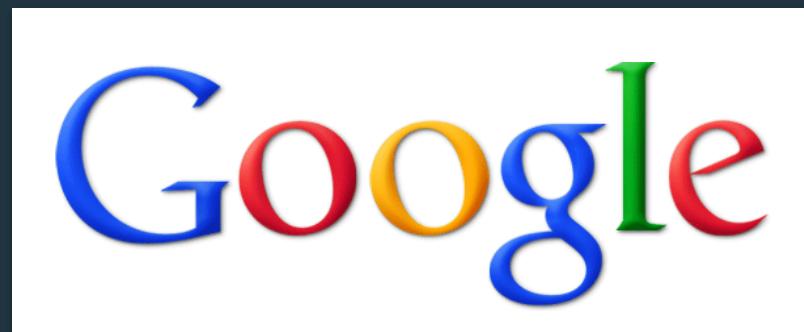
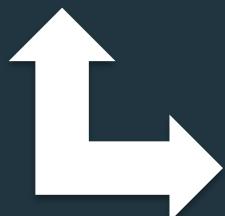
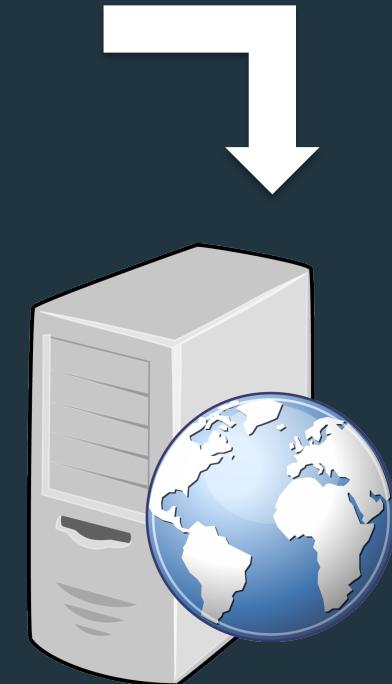
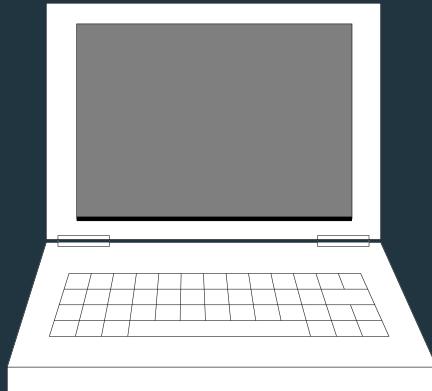
Launch...

Winky



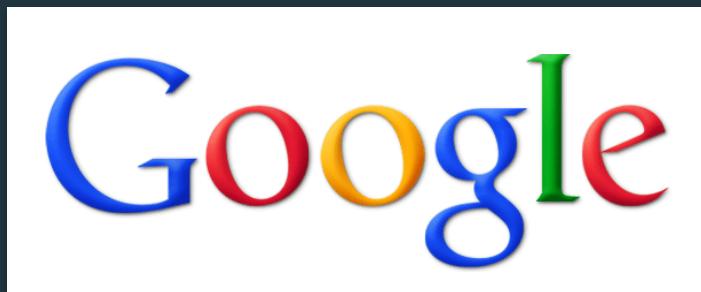
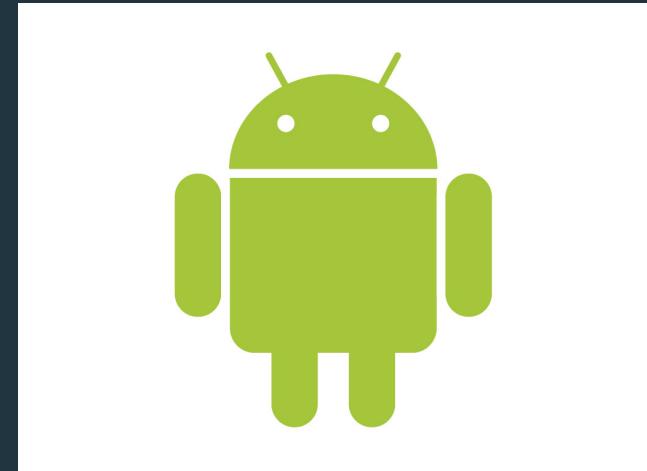
Mirror API

developers.google.com/glass/develop/mirror



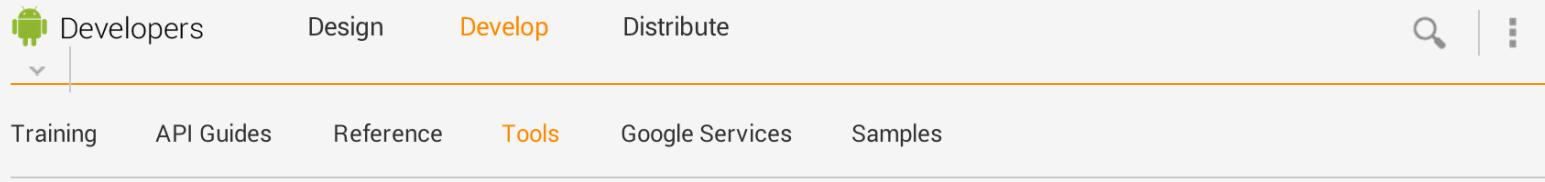
Native SDK

developers.google.com/glass/develop/gdk



Development Environment

developer.android.com/sdk



The screenshot shows the top navigation bar of the developer.android.com/sdk website. It includes a logo, links for Developers, Design, Develop (which is highlighted in orange), Distribute, a search icon, and a menu icon. Below this is a secondary navigation bar with links for Training, API Guides, Reference, Tools (highlighted in orange), Google Services, and Samples.

Download

- Installing the SDK
- Adding SDK Packages
- Android Studio
- Workflow
- Support Library
- Tools Help
- Revisions
- NDK
- ADK

Get the Android SDK

The Android SDK provides you the API libraries and developer tools necessary to build, test, and debug apps for Android.

If you're a new Android developer, we recommend you download the ADT Bundle to quickly start developing apps. It includes the essential Android SDK components and a version of the Eclipse IDE with built-in **ADT (Android Developer Tools)** to streamline your Android app development.

[Download Eclipse ADT with the Android SDK for Mac](#)

With a single download, the Eclipse ADT bundle includes everything you need to begin developing apps:

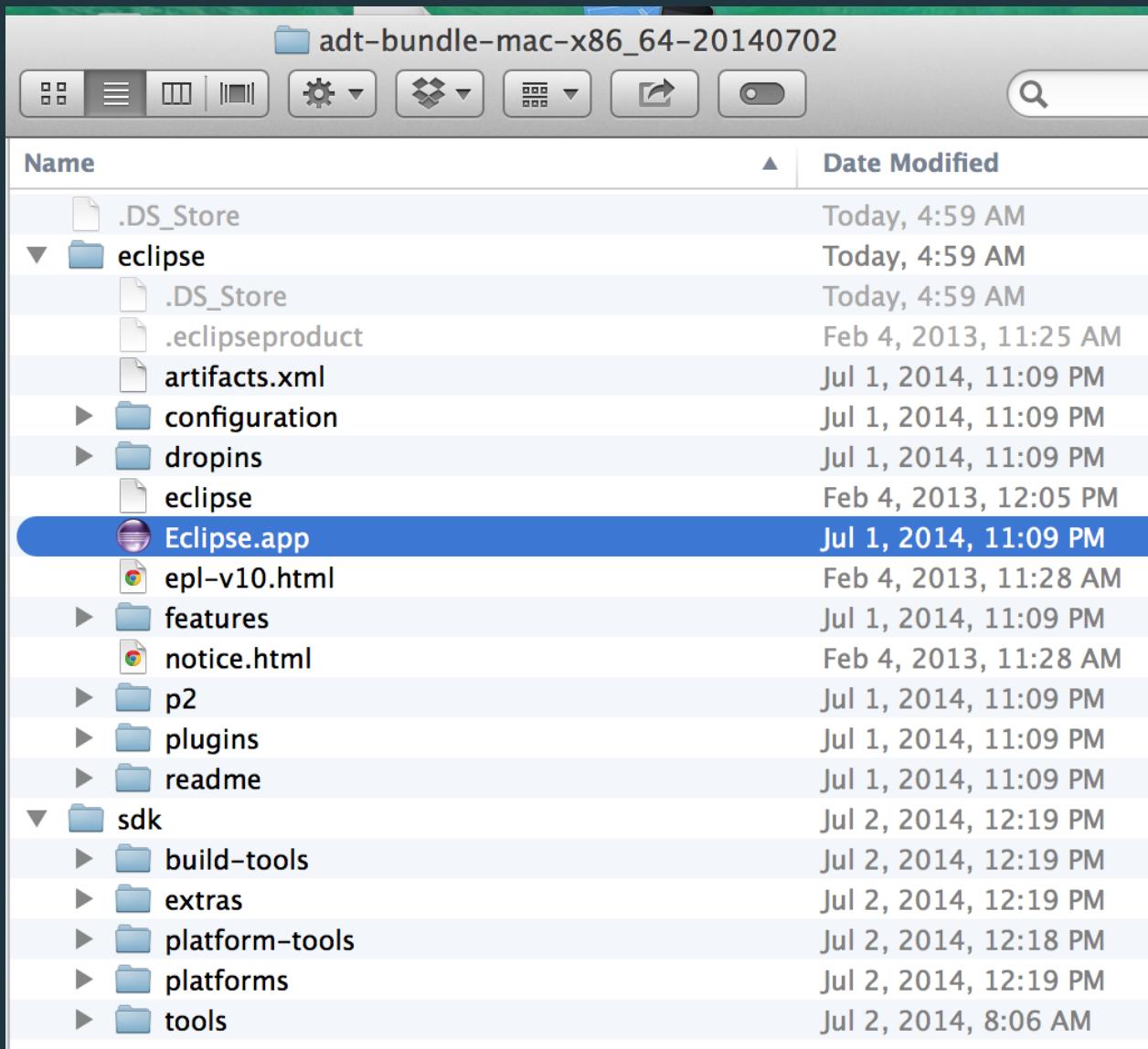
- Eclipse + ADT plugin
- Android SDK Tools
- Android Platform-tools
- A version of the Android platform



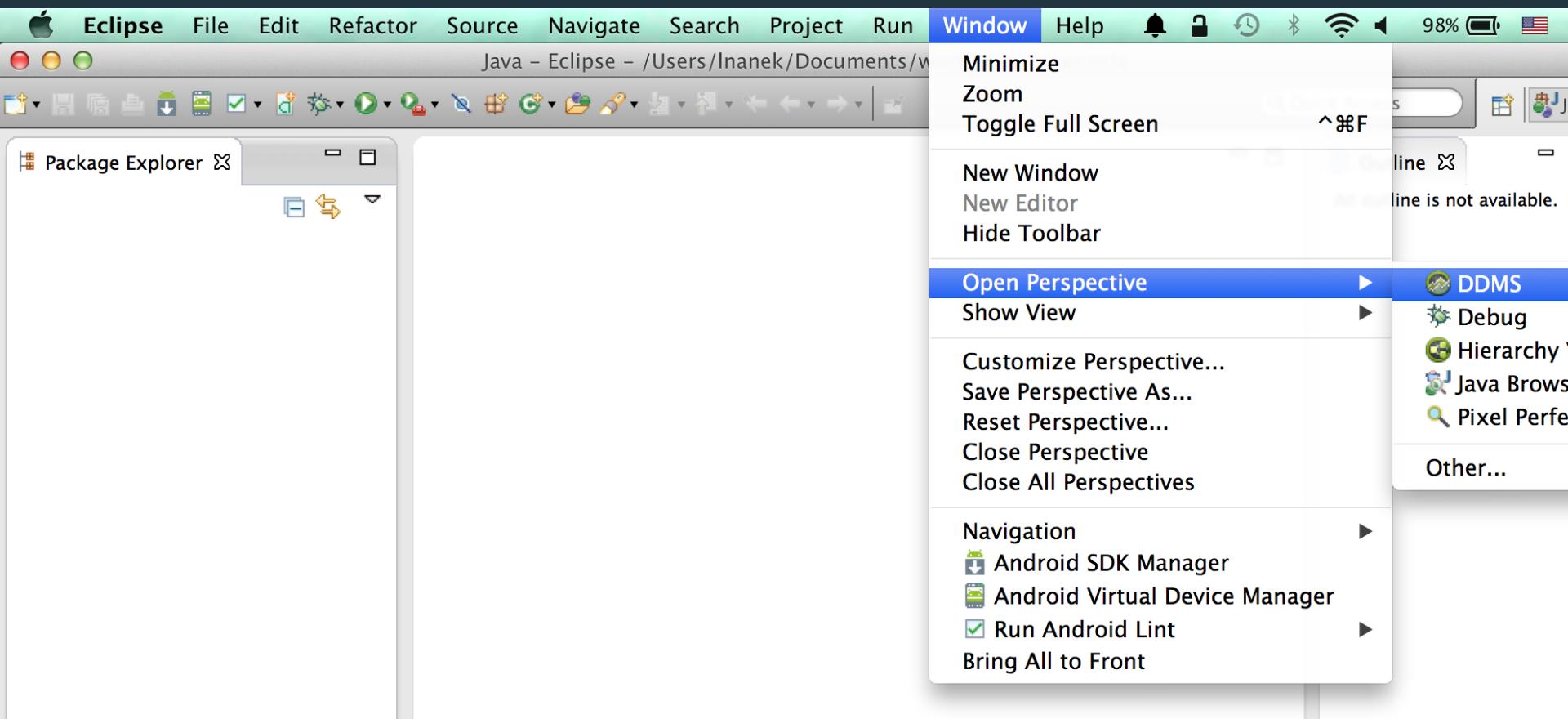
Get Android Studio Beta

Android Studio is a new IDE powered by IntelliJ that provides new features and improvements over ADT. It's currently in beta but will be the official Android IDE once it's ready.

Extract and Start Eclipse



Open DDMS Perspective



Connect & Enable Glass Debug Mode

5:31

" ok glass "



Settings
Battery charged
Wifi data

Device info
XE19.1 up to date
12.4 GB free



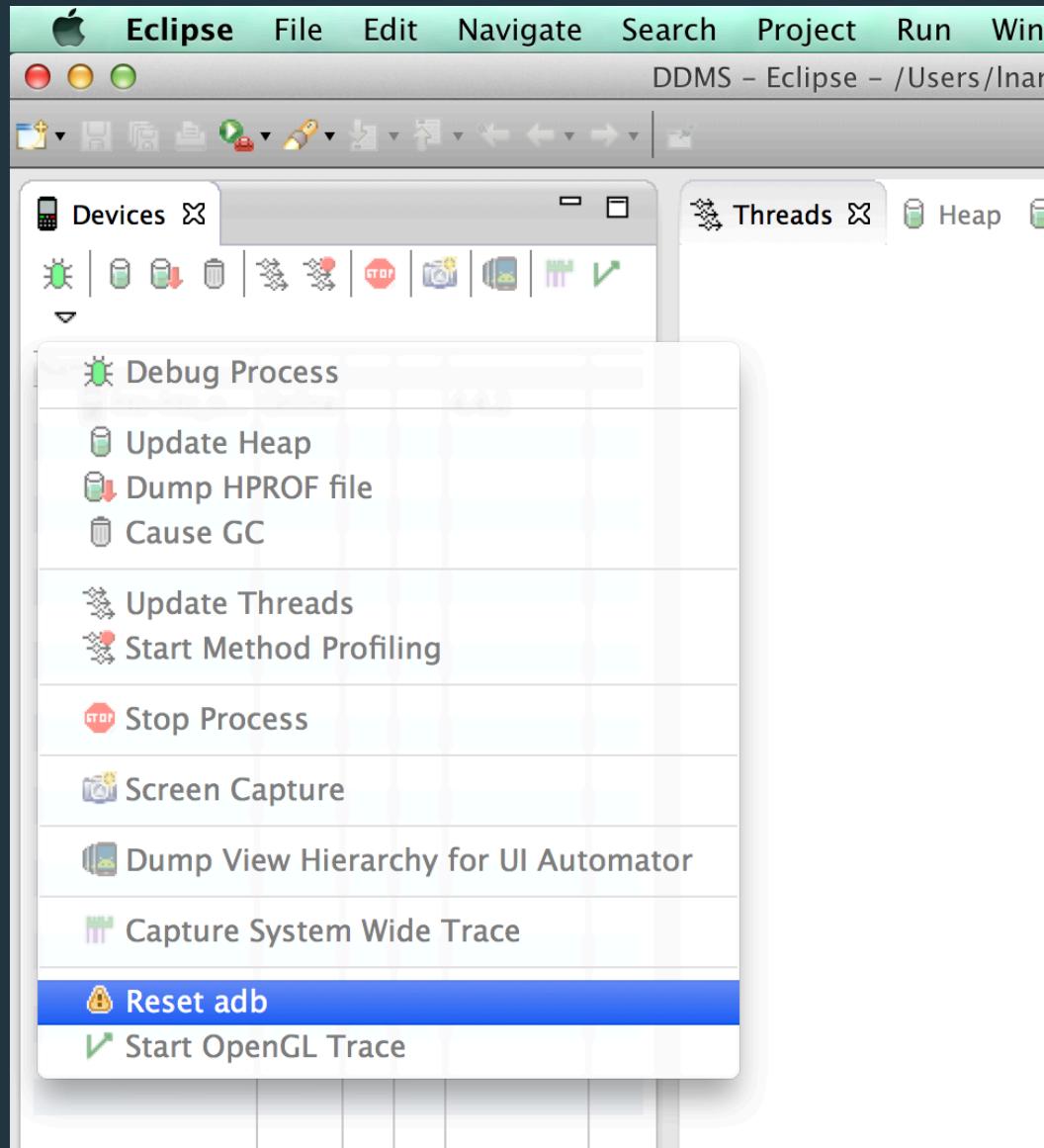
Serial PCNUF142312602



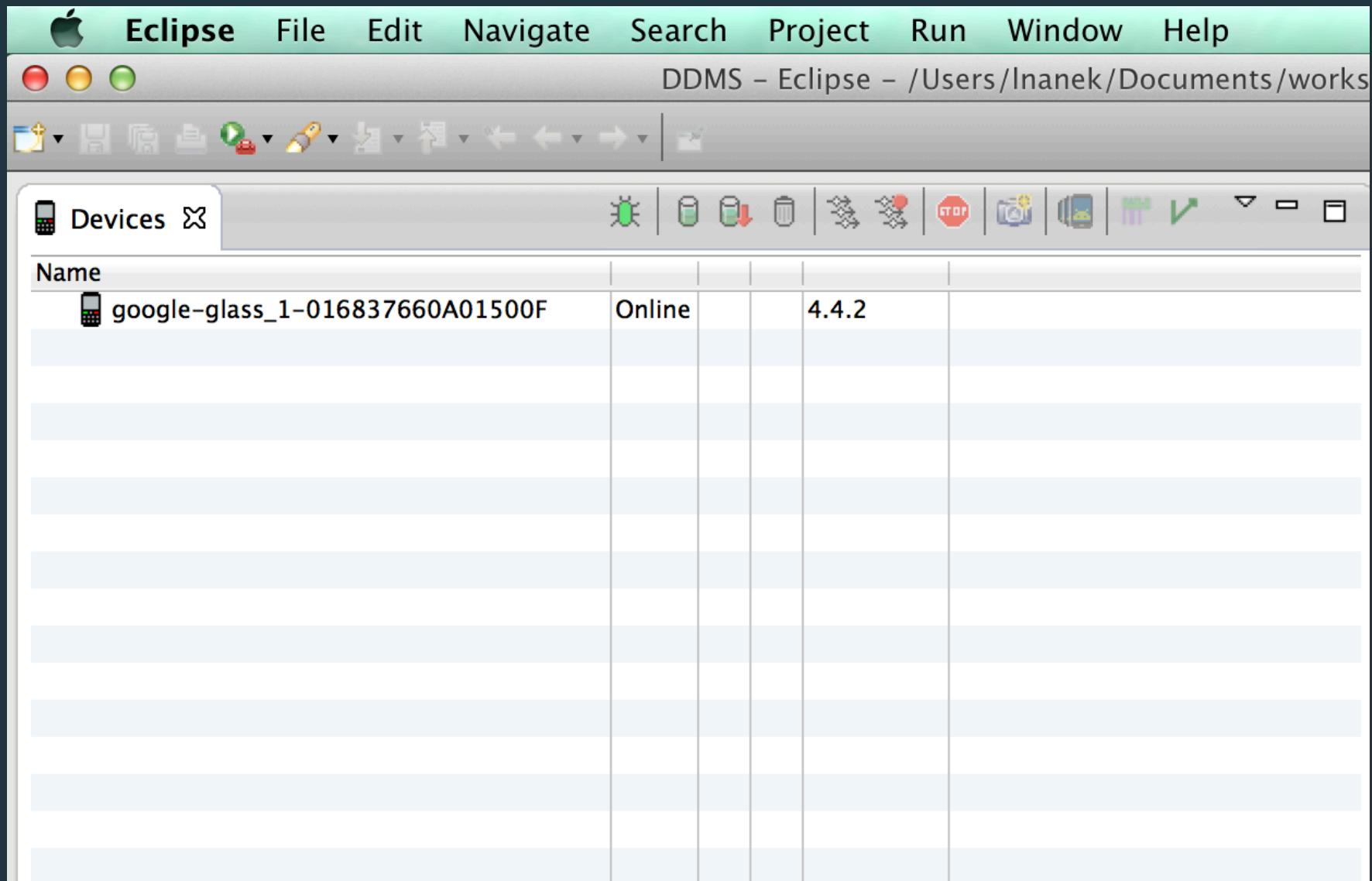
Device info
XE19.1 up to date
12.4 GB free
Turn off debug

Serial PCNUF142312602

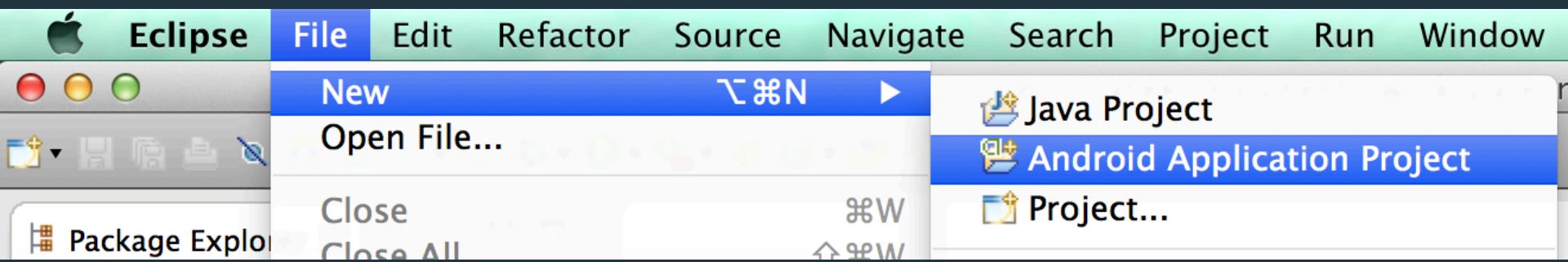
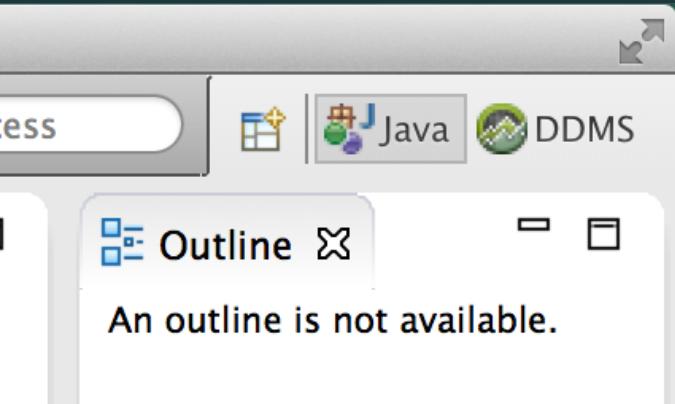
Reset ADB if Needed



Confirm Glass Available in DDMS



Create New Project



Create New Project

New Android Application

New Android Application
Creates a new Android Application



Application Name: Project Name: Package Name:

Minimum Required SDK: Target SDK: Compile With: Theme:

 The package name must be a unique identifier for your application.
It is typically not shown to users, but it **must** stay the same for the lifetime of your application; it is how multiple versions of the same application are considered the "same app".
This is typically the reverse domain name of your organization plus one or more application identifiers, and it must be a valid Java package name.

Create New Project

New Android Application

New Android Application

Configure Project



Create custom launcher icon

Create activity

Mark this project as a library

Create Project in Workspace

Location:

Working sets

Add project to working sets

Working sets:

Create New Project

New Android Application

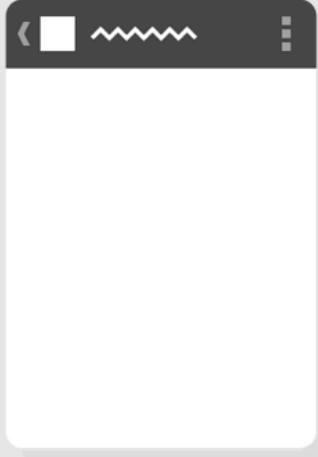
Create Activity

Select whether to create an activity, and if so, what kind of activity.



Create Activity

- Blank Activity
- Blank Activity with Fragment
- Empty Activity
- Fullscreen Activity
- Master/Detail Flow
- Navigation Drawer Activity
- Tabbed Activity



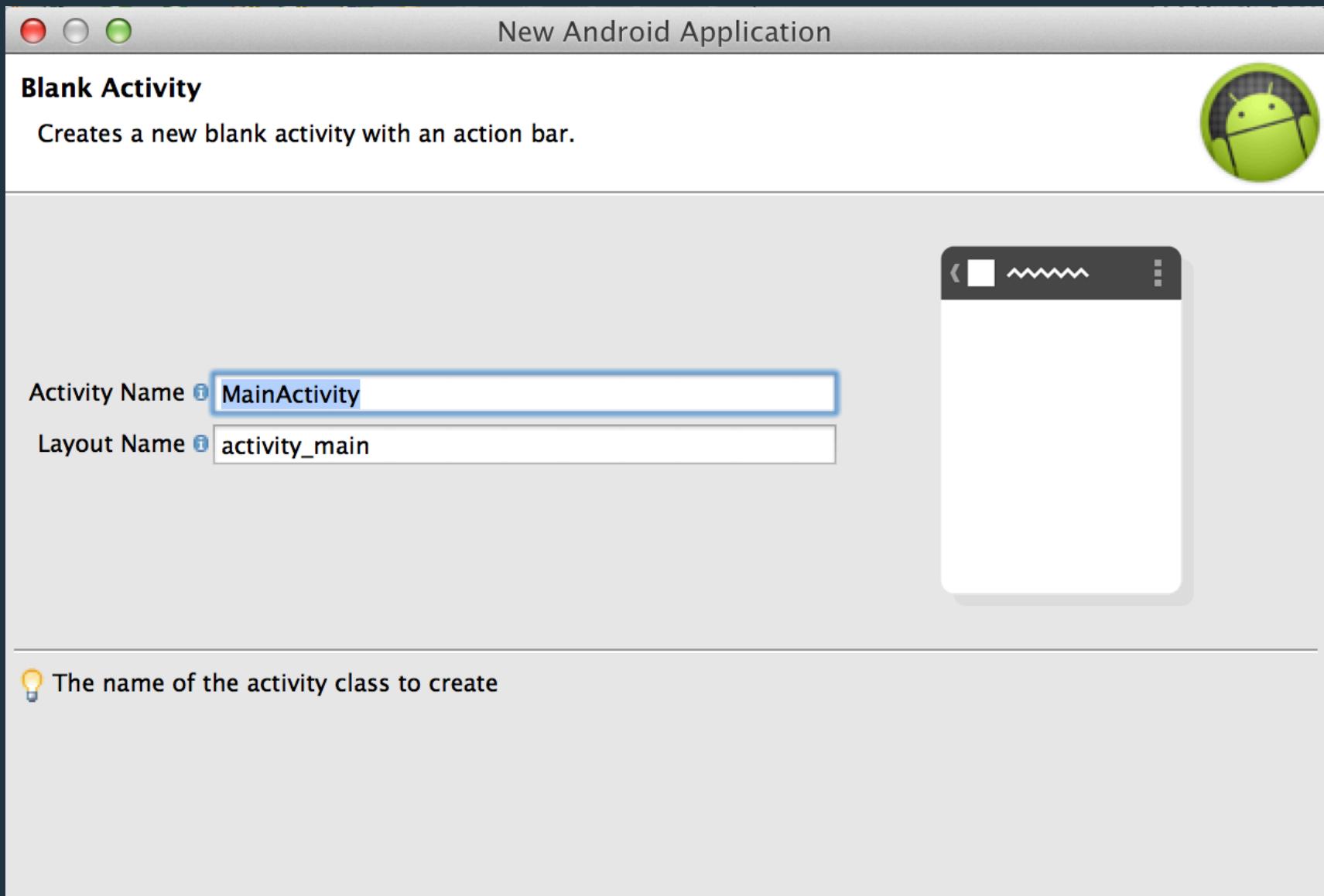
Blank Activity

Creates a new blank activity with an action bar.

Create New Project

New Android Application

Blank Activity
Creates a new blank activity with an action bar.

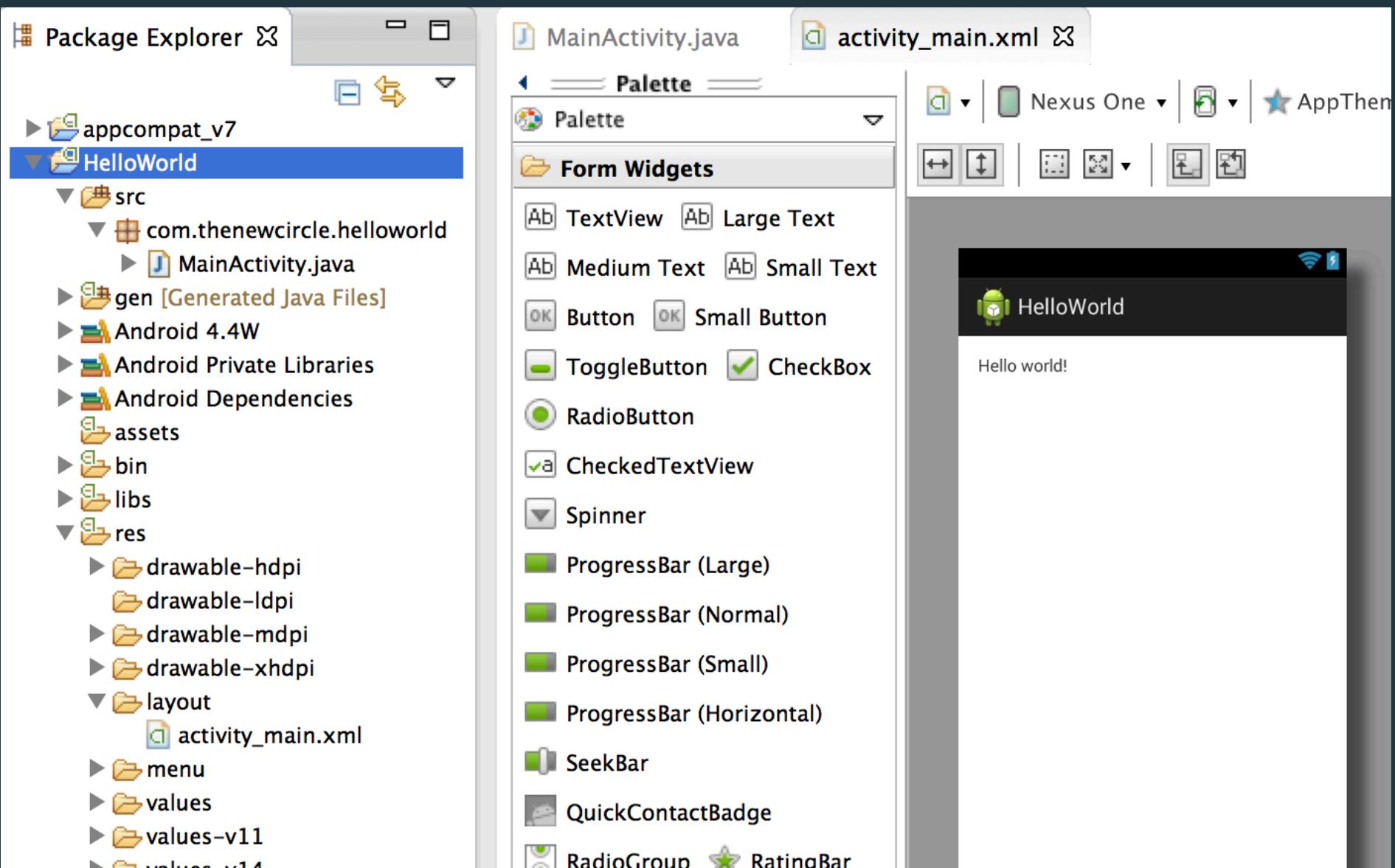


The screenshot shows the 'New Android Application' dialog in Android Studio. The 'Blank Activity' template is selected, indicated by a blue outline around its name. The 'Activity Name' field contains 'MainActivity' and the 'Layout Name' field contains 'activity_main'. To the right, there's a preview window showing a simple white activity screen with an action bar at the top. A green Android robot icon is also visible in the top right corner of the dialog. At the bottom left, there's a note about the activity class name.

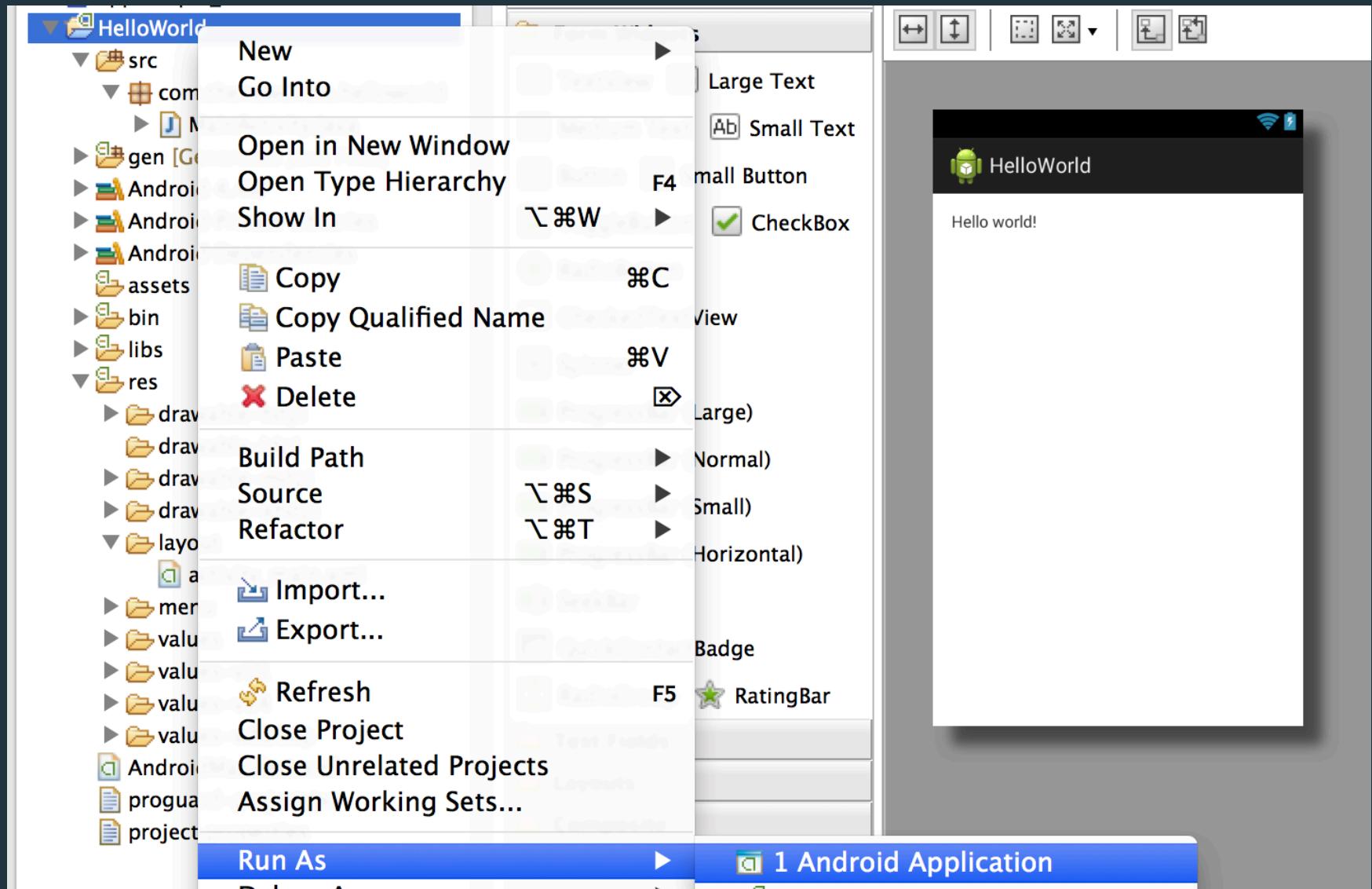
Activity Name Layout Name

 The name of the activity class to create

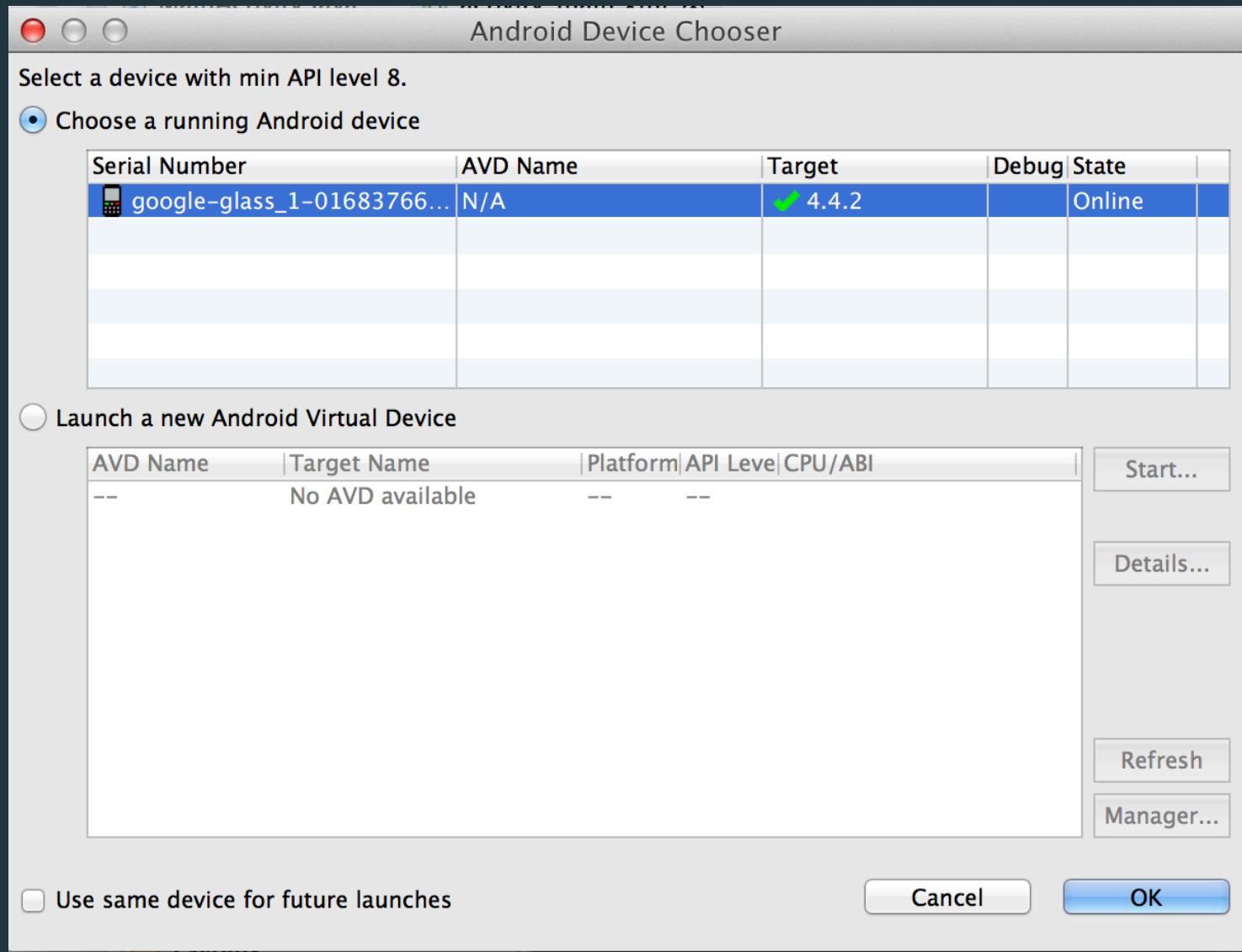
Create New Project



Tap Glass then Run As Android App

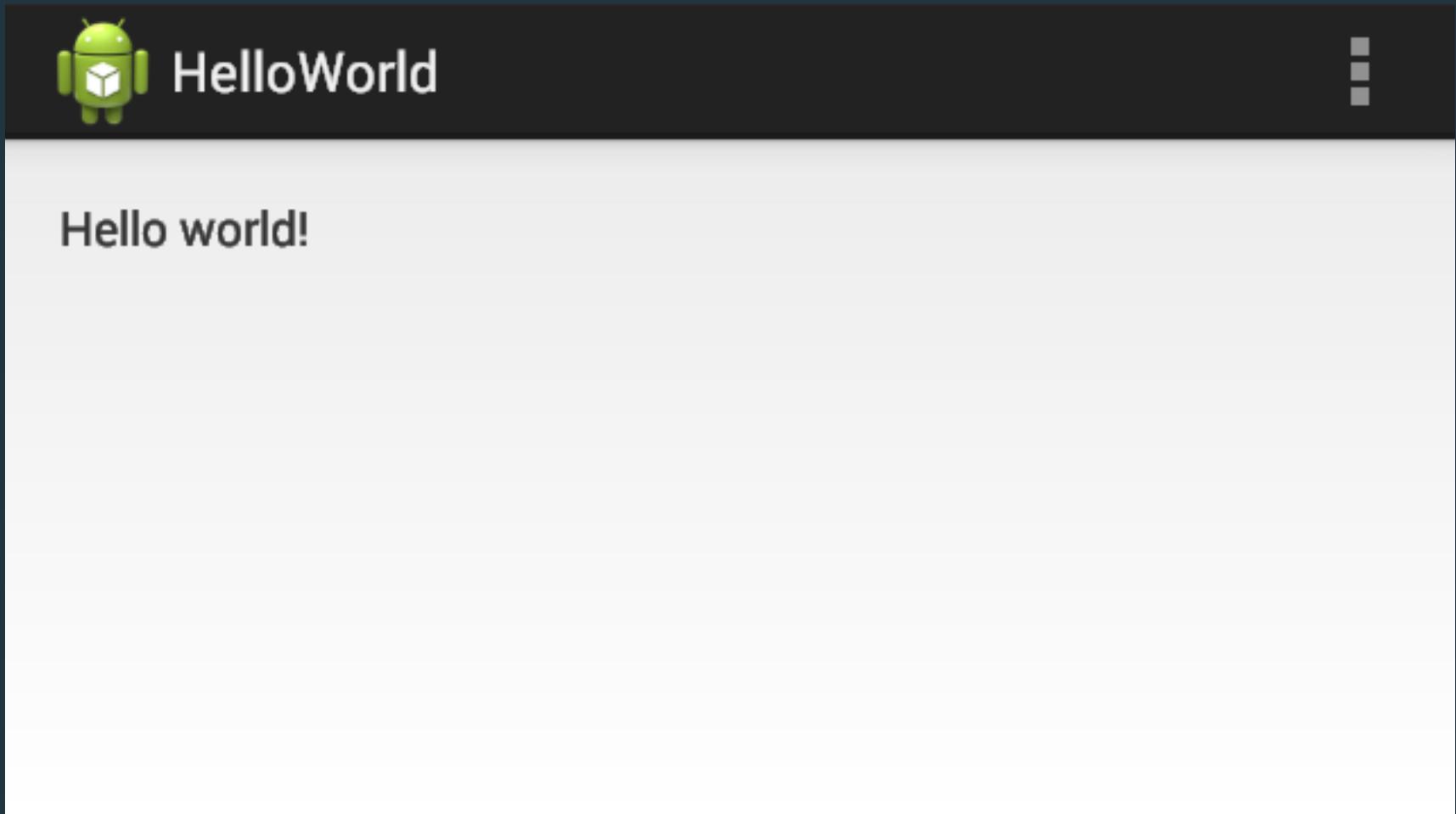


Tap Glass then Run As Android App

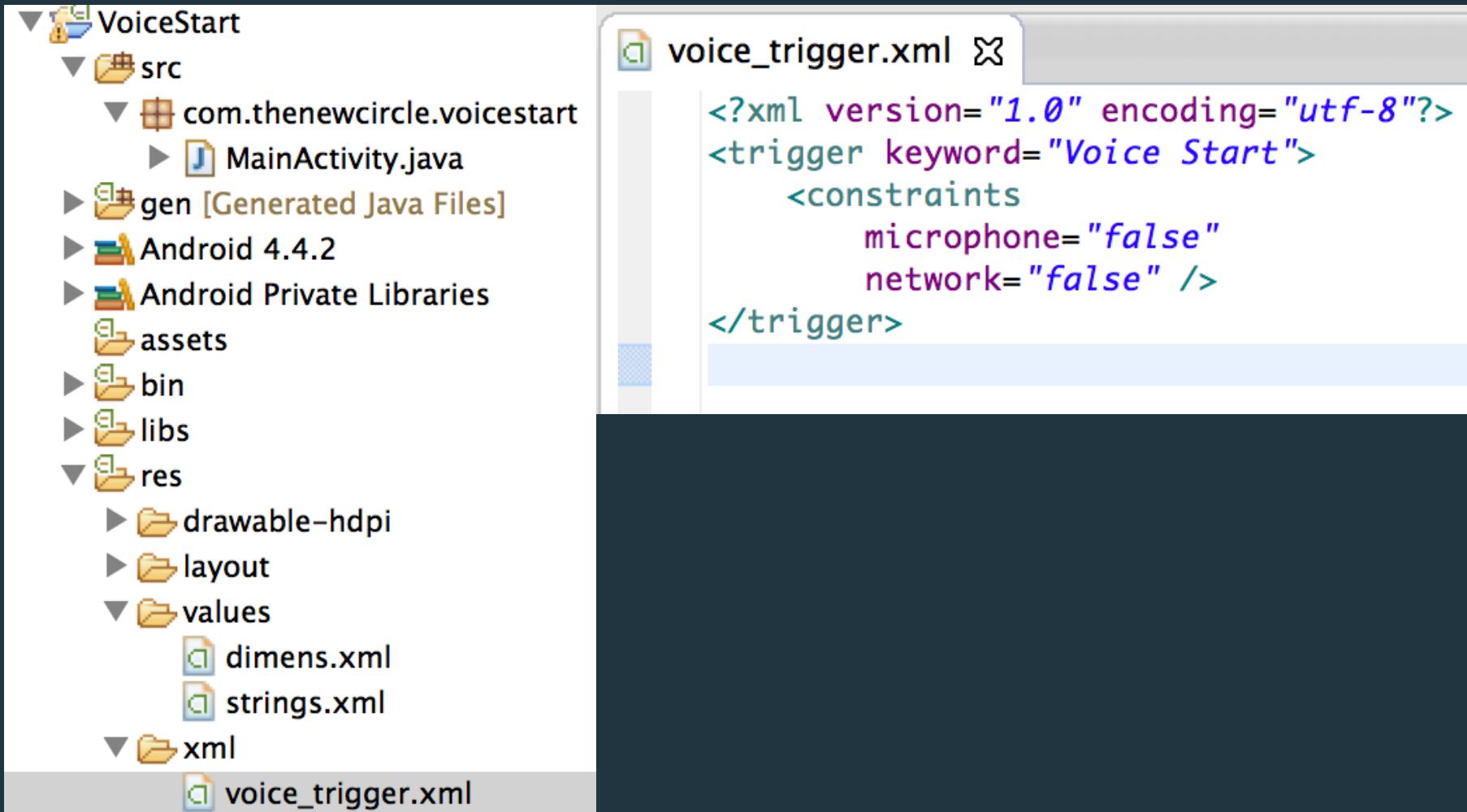


Tap Glass then Run As Android App

github.com/lnanek/NativeGlass/tree/master/HelloWorld



Start by Voice XML File



Start by Voice AndroidManifest.xml

AddVoiceCommandDemo Manifest ☒

```
AndroidManifest - Easy for App Theme
<activity
    android:name="com.example.addvoicecommanddemo.FullscreenActivity"
    android:configChanges="orientation|keyboardHidden|screenSize"
    android:label="@string/app_name"
    android:theme="@style/FullscreenTheme" >
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
    <intent-filter>
        <action android:name="com.google.android.glass.action.VOICE_TRIGGER" />
    </intent-filter>
    <meta-data
        android:name="com.google.android.glass.VoiceTrigger"
        android:resource="@xml/voice_trigger_hello_world" />
```

Start by Voice Permission

AddVoiceCommandDemo Manifest

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

    <uses-permission android:name="com.google.android.permission.DEVELOPMENT" />

    <uses-sdk
        android:minSdkVersion="8"
        android:targetSdkVersion="18" />
```

Start by Voice Demo

github.com/lnanek/NativeGlass/tree/master/VoiceStart

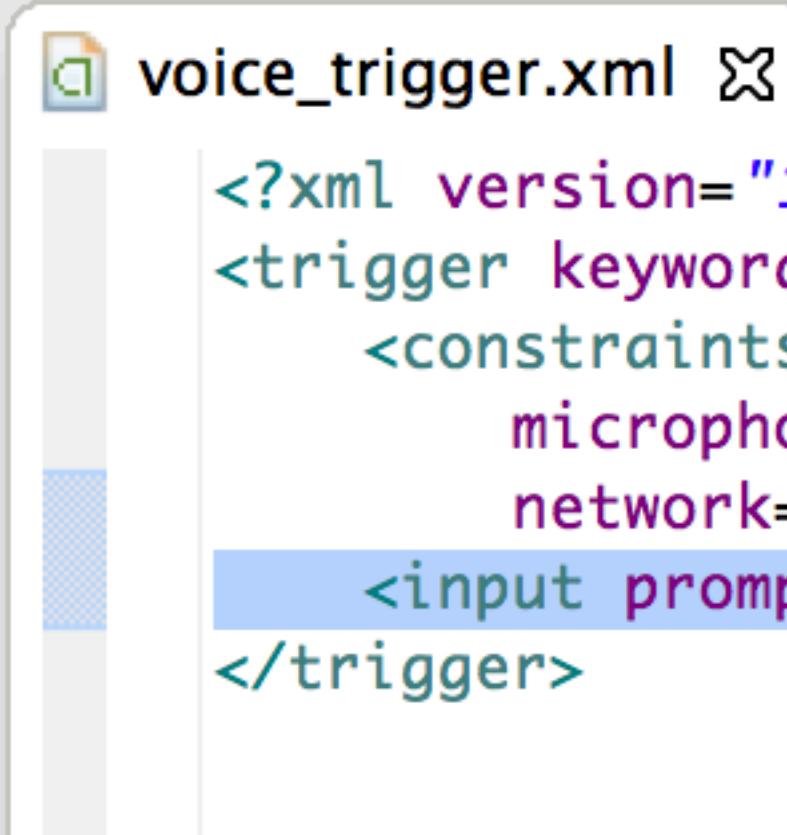
8:00

" ok glass "

Hello World
Voice Start
Take a picture
Discover this
Google

Hello Voice Start

Voice Input XML File



```
<?xml version="1.0" encoding="utf-8"?>
<trigger keyword="Voice Prompt">
    <constraints
        microphone="false"
        network="false" />
    <input prompt="Say your name" />
</trigger>
```

Voice Input Prompt Code

AddVoiceCommandDemo Manifest



FullscreenActivity.java

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_fullscreen);
    final TextView fullscreenContent = (TextView) findViewById(R.id.fullscreen_content);
    final ArrayList<String> voiceResults =
        getIntent().getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
    if ( null != voiceResults ) {
        String voiceCommand = "";
        for (final String result : voiceResults) {
            voiceCommand += result + " ";
        }
        voiceCommand = voiceCommand.trim();

        fullscreenContent.setText("Hello " + voiceCommand);
    } else {
        fullscreenContent.setText("Hello World");
    }
}
```

Voice Input Prompt Demo

github.com/lnanek/NativeGlass/tree/master/VoicePrompt

Voice Prompt
Say your name



Voice Prompt
Lance



AddVoiceCommandDemo

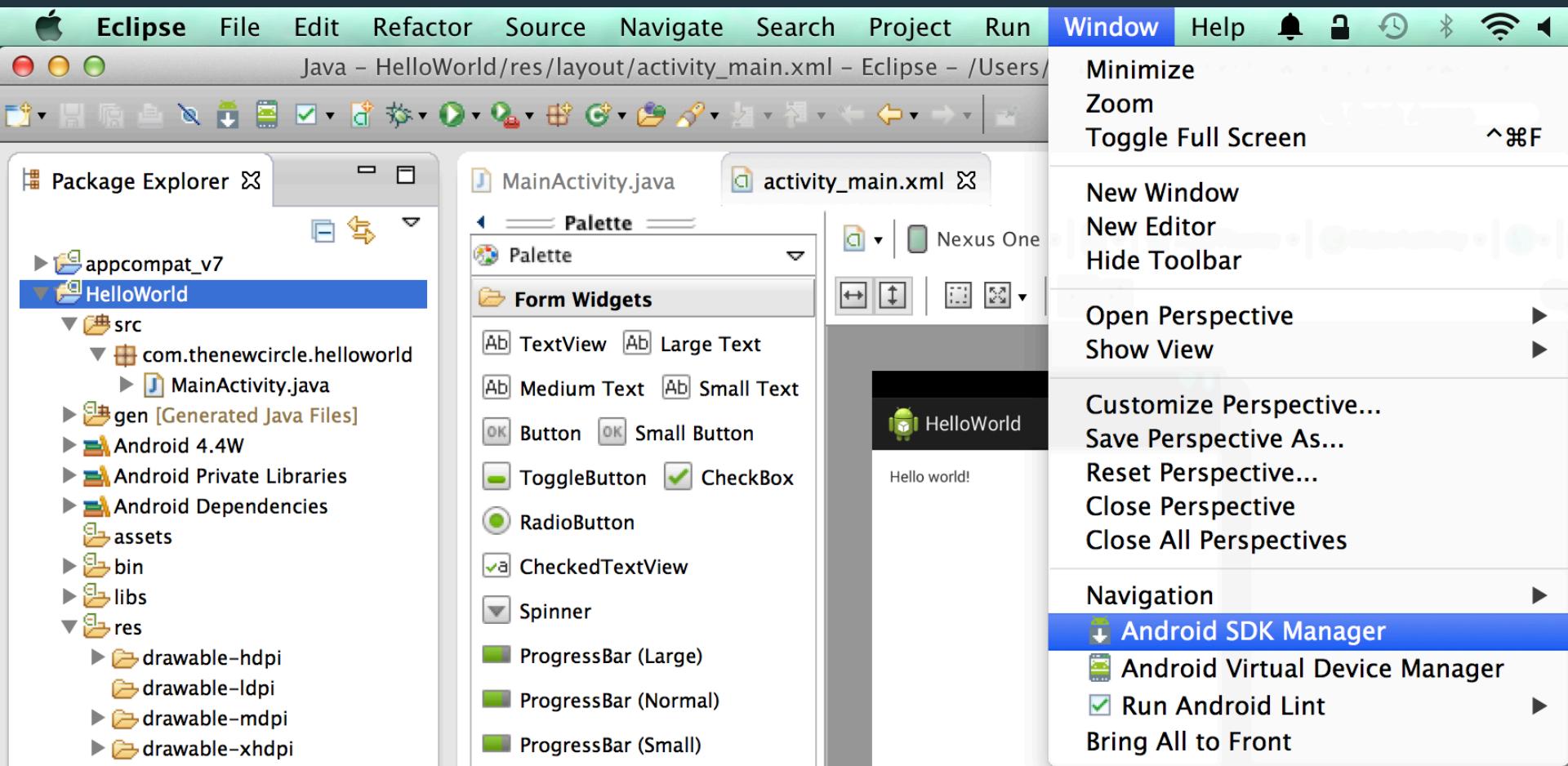
Hello Lance

Glass Development Kit

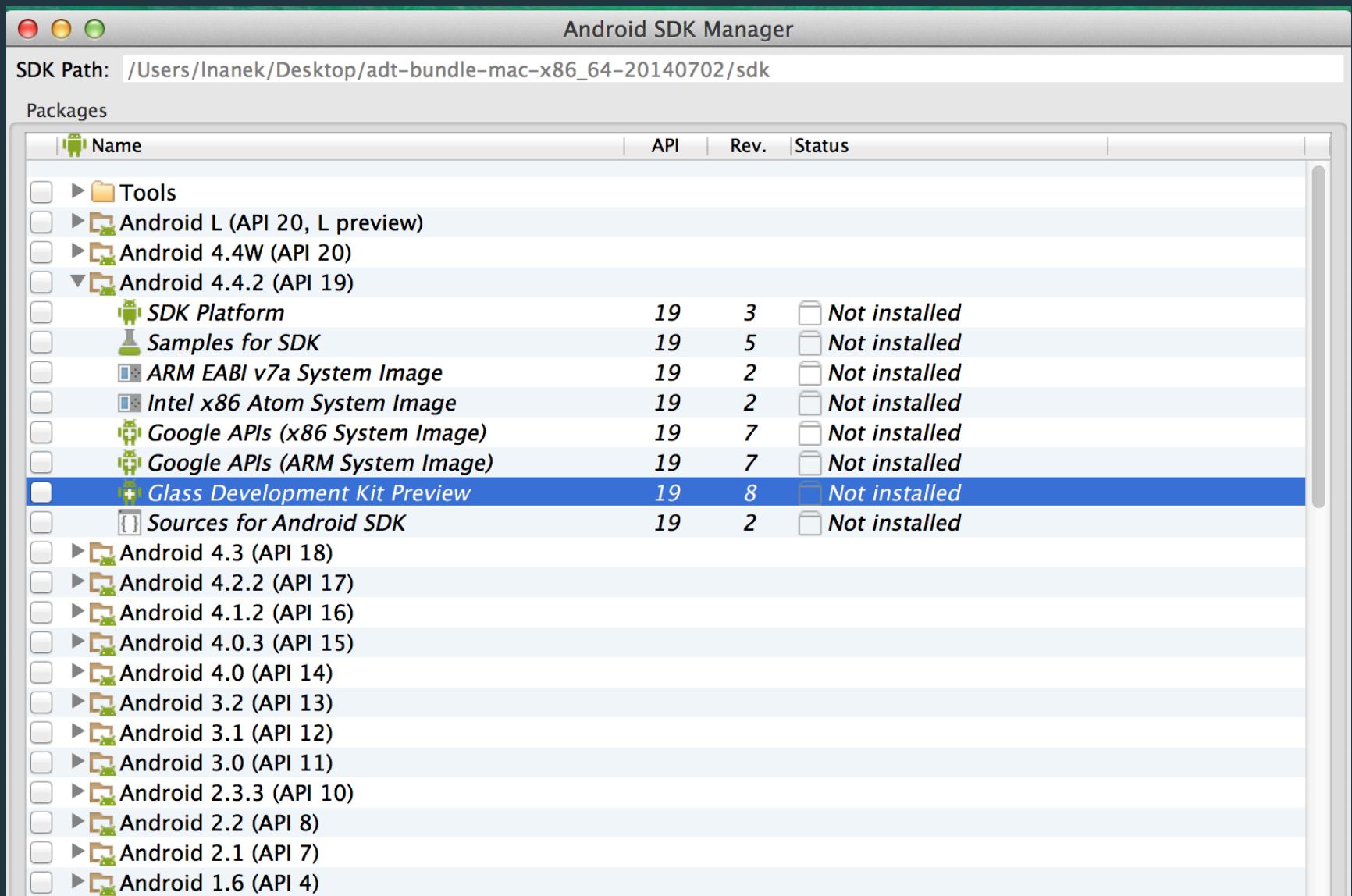
developers.google.com/glass/develop/overview

Android SDK		GDK add-on	
Layouts, views, and other UI widgets	Activities, services, and other building blocks	Voice	Gesture Detector
GPS, sensors, and other hardware	...	Cards	...

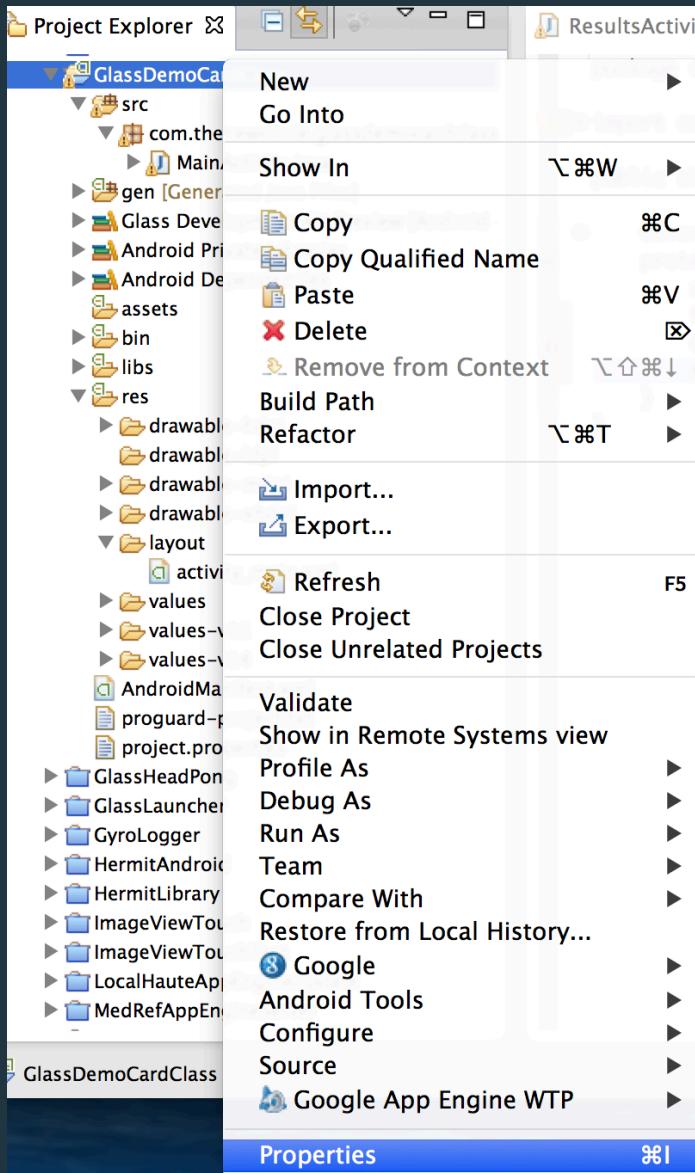
Install Glass Development Kit



Install Glass Development Kit



Install Glass Development Kit



Install Glass Development Kit

The screenshot shows the Eclipse IDE interface. On the left, the 'Properties' view is open under the 'Android' category. The tree view lists various project settings like 'Android', 'Builders', 'Google', 'Java Build Path', etc. The 'Project Facets' node is expanded, showing 'Android' and 'Java'. On the right, the 'Project Build Target' dialog is displayed, listing a large number of build targets. The target 'Glass Development Kit Preview' is selected, indicated by a checked checkbox.

Properties

- Android
- Android Lint Preferences
- Builders
- ▶ Google
 - Java Build Path
 - ▶ Java Code Style
 - ▶ Java Compiler
 - ▶ Java Editor
 - Javadoc Location
 - Project Facets
 - Android
 - Java
 - Project References
 - Run/Debug Settings
 - Server
 - ▶ Task Repository
 - Task Tags
 - ▶ Validation
 - WikiText

Project Build Target

Target Name
<input type="checkbox"/> Android 2.1
<input type="checkbox"/> Google APIs
<input type="checkbox"/> Android 2.2
<input type="checkbox"/> Google APIs
<input type="checkbox"/> Android 2.3.3
<input type="checkbox"/> Intel Atom x86 System Image
<input type="checkbox"/> Android 4.0.3
<input type="checkbox"/> Google APIs
<input type="checkbox"/> HTC OpenSense SDK
<input type="checkbox"/> Android 4.1.2
<input type="checkbox"/> Google APIs
<input type="checkbox"/> HTC OpenSense APIs
<input type="checkbox"/> Android 4.2.2
<input type="checkbox"/> Google APIs
<input type="checkbox"/> Android 4.3
<input type="checkbox"/> Google APIs
<input type="checkbox"/> Android 4.4.2
<input checked="" type="checkbox"/> Glass Development Kit Preview

Using the Card Class

developers.google.com/glass/develop/gdk/reference/com/google/android/glass/app/Card

```
import android.app.Activity;
import android.os.Bundle;

import com.google.android.glass.app.Card;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        final Card card = new Card(this);
        card.setText("Hello World!");
        card.addImage(R.drawable.ic_launcher);
        setContentView(card.getView());
    }
}
```

Display as a Card Demo

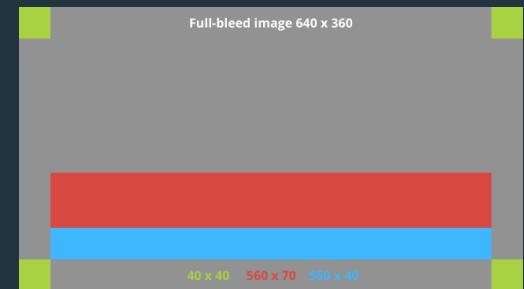
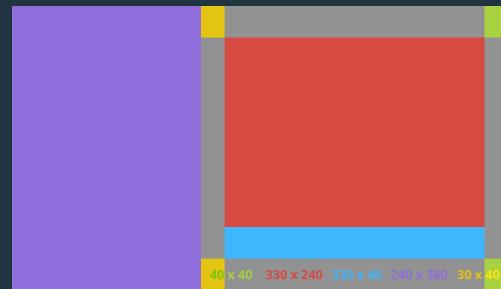
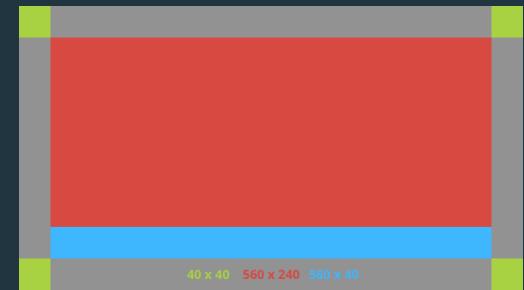
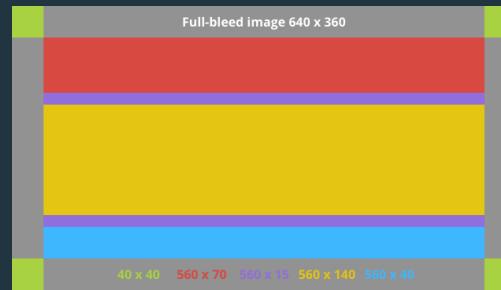
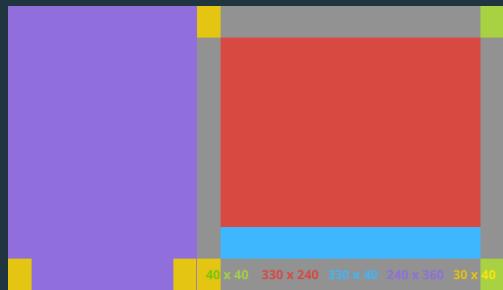
github.com/lnanek/NativeGlass/tree/master/CardClass



Hello
World!

Card Regions

developers.google.com/glass/design/style



Card Playground Templates

developers.google.com/glass/tools-downloads/playground

Gingerbread

Chocolate Chip Cookies

Tiramisu

Donuts

Sugar Plum Gummies

Grocery list

LIST



Born

Feb 12, 1809

Died

Apr 15, 1865

Height

6' 4"

IMAGE LIST



U.S. Presidents

Washington

1st

Lincoln

16th

Obama

44th

MOSAIC LIST

This item auto-resizes according to the text length

TEXT

This *paragraph* auto-resizes according to the **HTML** content length.

AUTO RESIZE



Spring Fling Fundraiser at Filoli

HYBRID



United States Presidents

HYBRID MOSAIC

This is the cover card of a long list

Hover to scroll

MULTIPAGE

8:00 PM

Dinner with folks tonight

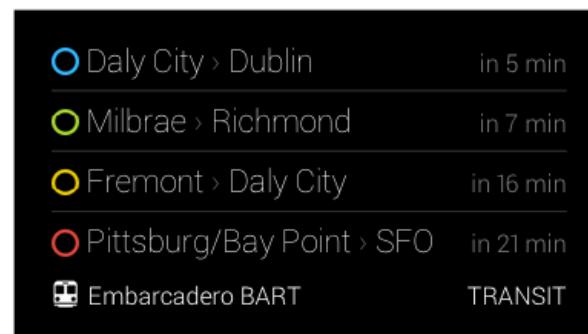
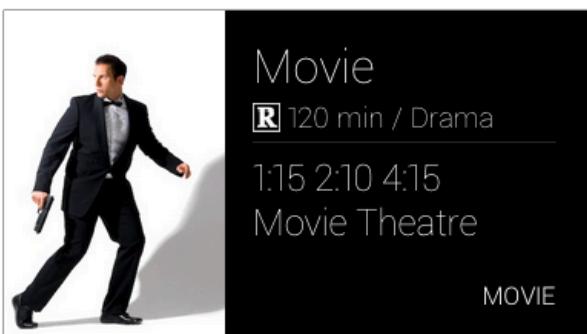
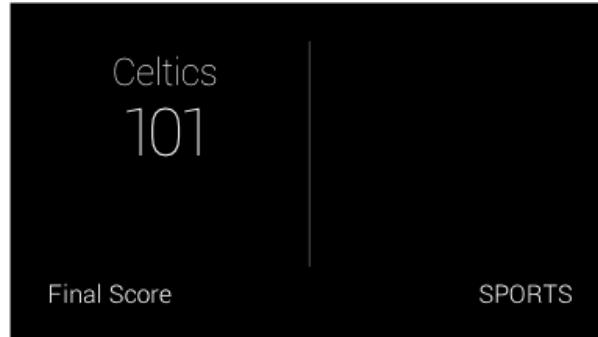
Their place

SIMPLE EVENT

Card Playground Templates

developers.google.com/glass/tools-downloads/playground

AAPL	503.73	-16.57 (3.18%)
AMZN	274.03	+6.09 (2.27%)
GOOG	727.58	-12.41 (1.68%)
STOCK		



Advanced Topics

GDK CardScrollView

GDK GestureDetector

Location Detection

Orientation and Movement Sensors

Menu Options

Contextual Voice Commands

My Glass Console Publishing Assets

My Glass Console Publishing Review

Thank You!

Questions?