



Social Media Apps Programming

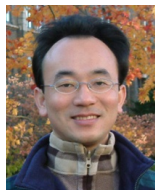
Developing Android Native Apps with Java (Android Studio) (MIT App Inventor)

1041SMAP03

TLMXM1A (8687) (M2143) (Fall 2015)

(MIS MBA) (2 Credits, Elective) [Full English Course]

Wed 9,10 (16:10-18:00) B310



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Assistant Professor

Department of Information Management

Tamkang University

<http://mail.tku.edu.tw/myday>



Course Schedule (1/3)

Week	Date	Subject/Topics
1	2015/09/16	Course Orientation and Introduction to Social Media and Mobile Apps Programming
2	2015/09/23	Introduction to Android / iOS Apps Programming
3	2015/09/30	Developing Android Native Apps with Java (Android Studio) (MIT App Inventor)
4	2015/10/07	Developing iPhone / iPad Native Apps with Swift (XCode)
5	2015/10/14	Mobile Apps using HTML5/CSS3/JavaScript
6	2015/10/21	jQuery Mobile

Course Schedule (2/3)

Week	Date	Subject/Topics
7	2015/10/28	Create Hybrid Apps with Phonegap
8	2015/11/04	jQuery Mobile/Phonegap
9	2015/11/11	jQuery Mobile/Phonegap
10	2015/11/18	Midterm Exam Week (Midterm Project Report)
11	2015/11/25	Case Study on Social Media Apps Programming and Marketing in Google Play and App Store
12	2015/12/02	Google Cloud Platform

Course Schedule (3/3)

Week	Date	Subject/Topics
13	2015/12/09	Google App Engine
14	2015/12/16	Google Map API
15	2015/12/23	Facebook API (Facebook JavaScript SDK) (Integrate Facebook with iOS/Android Apps)
16	2015/12/30	Twitter API
17	2016/01/06	Final Project Presentation
18	2016/01/13	Final Exam Week (Final Project Presentation)

Android /iOS Apps Programming

Native Apps

Hybrid Apps

Mobile Web Apps



App Development Comparison

Device Access	Speed	Development Cost	App Store	Approval Process
---------------	-------	------------------	-----------	------------------

Native Apps	Full	Very Fast	Expensive	Available	Mandatory
--------------------	------	-----------	-----------	-----------	-----------

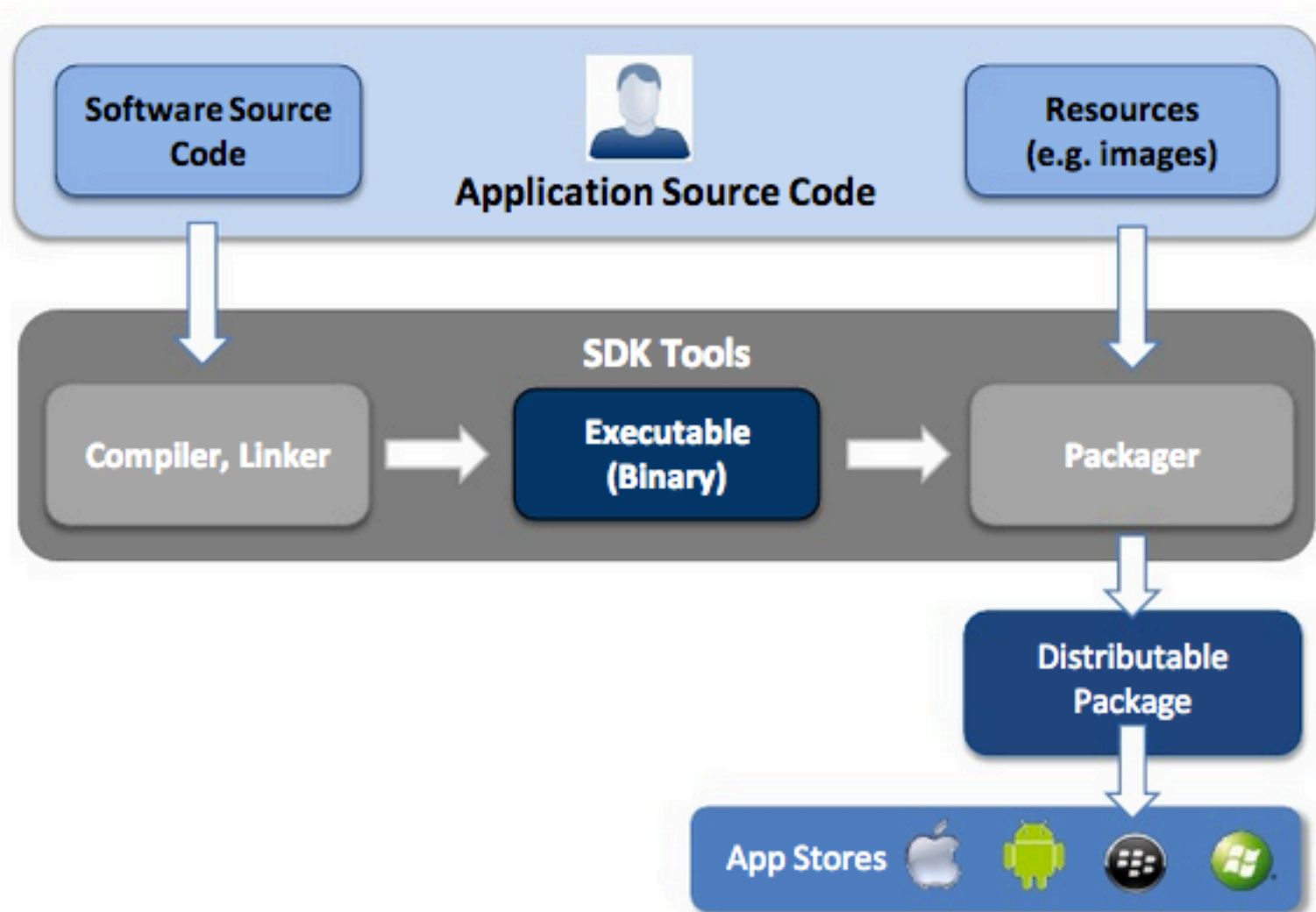
Hybrid Apps	Full	Native Speed as Necessary	Reasonable	Available	Low Overhead
--------------------	------	---------------------------	------------	-----------	--------------

Web Apps	Partial	Fast	Reasonable	Not Available	None
-----------------	---------	------	------------	---------------	------

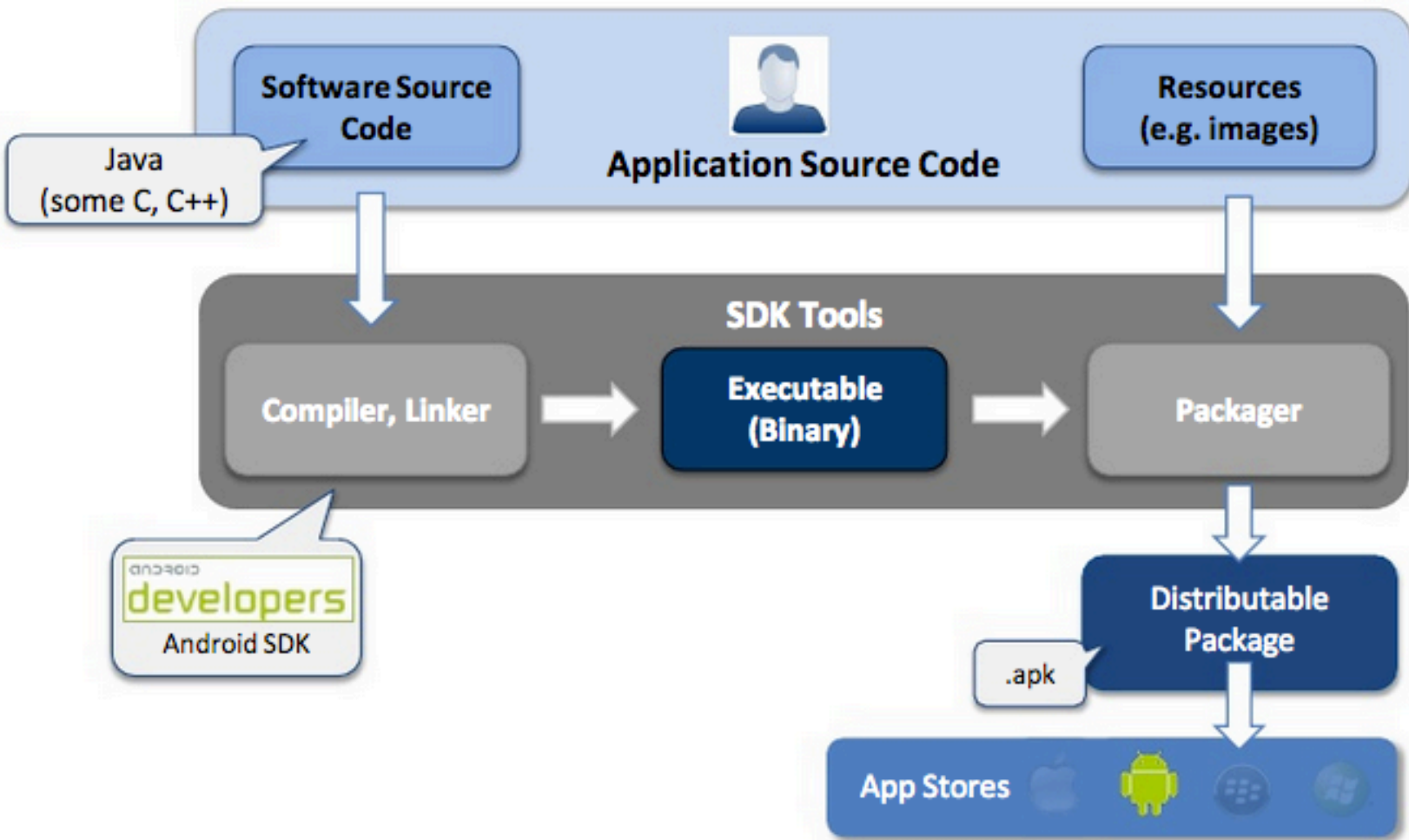
Outline

- **Developing **Android Native Apps with Java****
 - **Android Studio**
 - **Eclipse**
 - **Android Developer Tools (ADT) Bundle**
 - **Building Your First Android App**
- **MIT App Inventor**

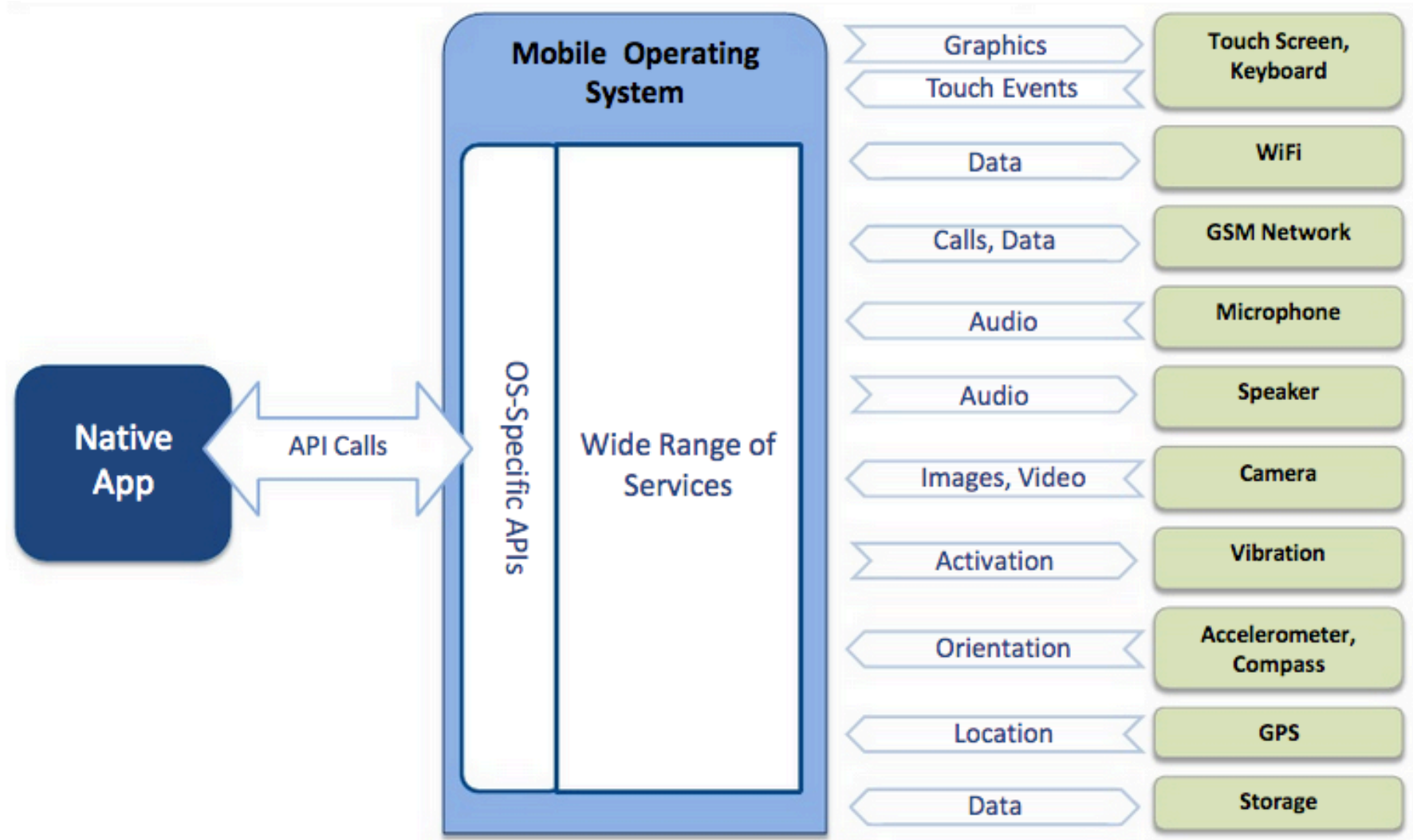
Native App Development



Android - Native App Development



Native App – Interaction with Mobile Device



Android

android

DISCOVER ▾

DEVICES ▾

PLAY

PAY

MORE ▾



Powering screens of all sizes

Android is the customizable, easy to use operating system that powers more than a billion devices across the globe – from phones and tablets to watches, TV, cars and more to come.



ANDROID WEAR



PHONES



TABLETS



ANDROID TV



ANDROID AUTO

Android

android

DISCOVER ▾ DEVICES ▾ PLAY PAY MORE ▾ 

Lollipop

A sweet new take on Android.

[LEARN MORE](#)



Android 5.1 Lollipop



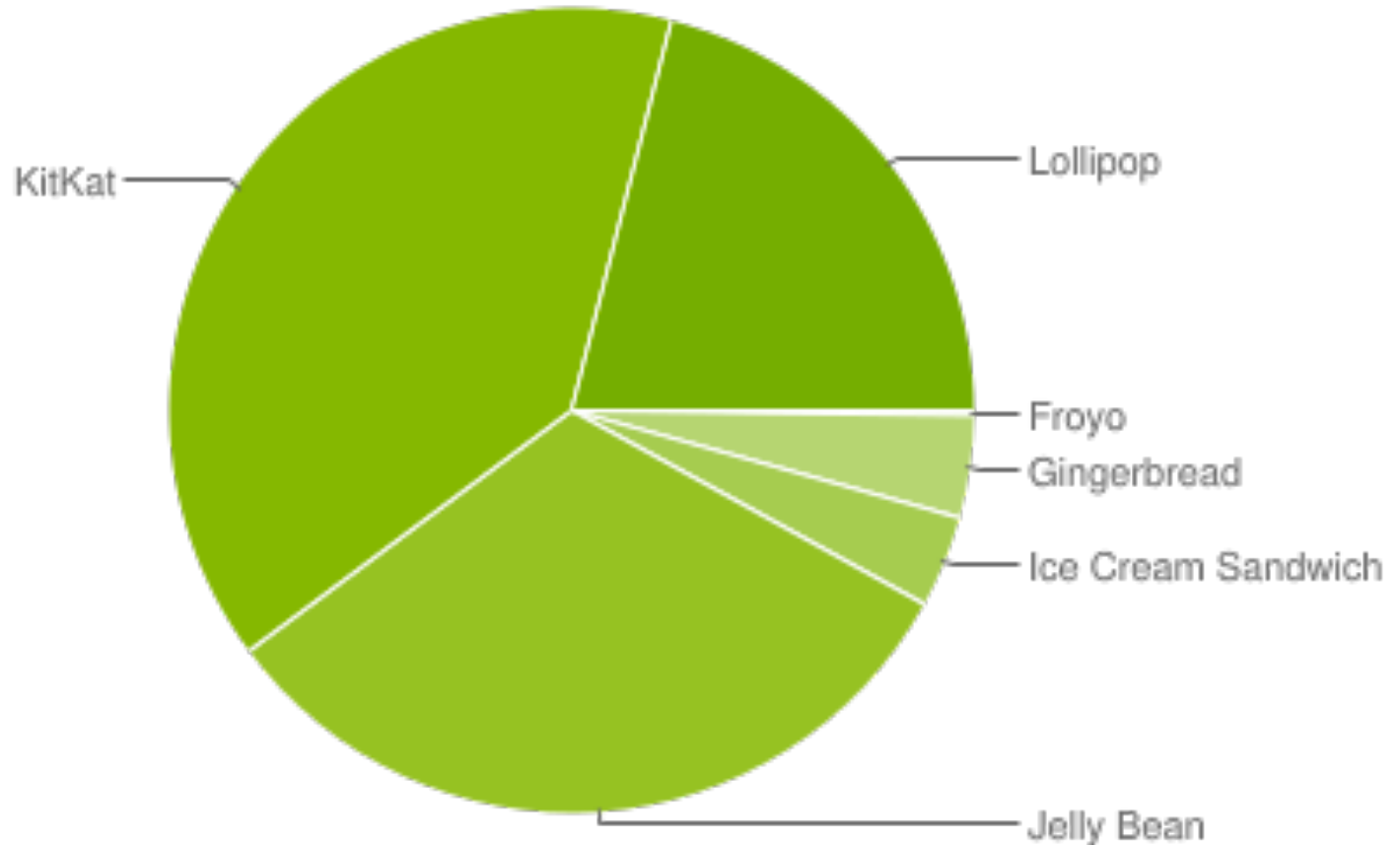
Android Platform

Version	Codename	API	Distribution
2.2	Froyo	8	0.2%
2.3.3 - 2.3.7	Gingerbread	10	4.1%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	3.7%
4.1.x	Jelly Bean	16	12.1%
4.2.x		17	15.2%
4.3		18	4.5%
4.4	KitKat	19	39.2%
5.0	Lollipop	21	15.9%
5.1		22	5.1%

Data collected during a 7-day period ending on September 7, 2015.

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

Android Platform

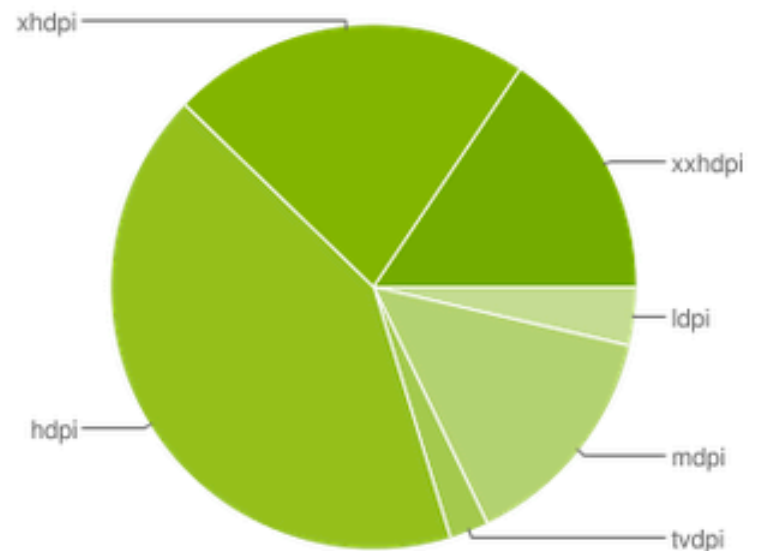
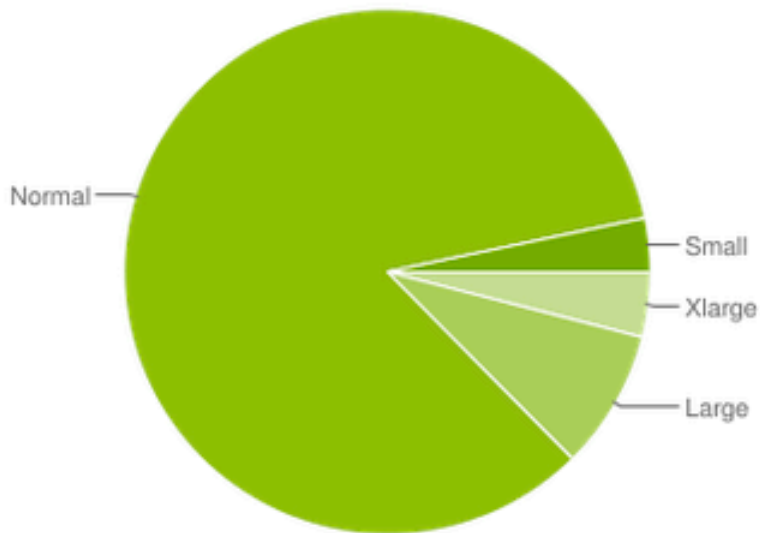


Data collected during a 7-day period ending on September 7, 2015.

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

Android Screen Sizes and Densities

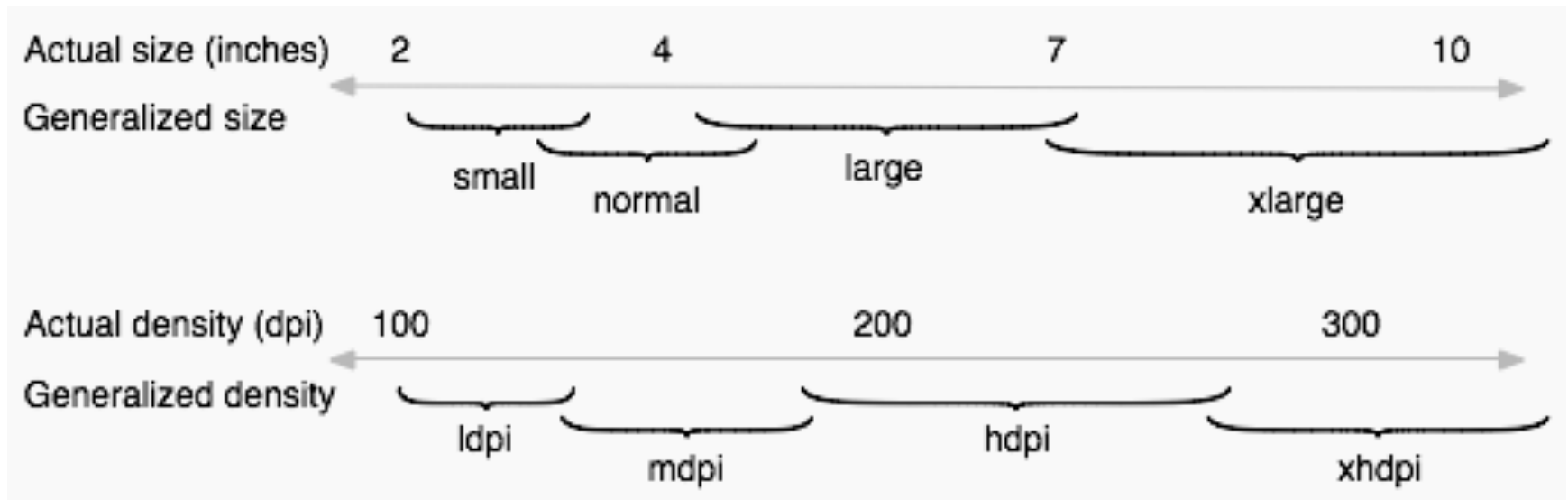
	ldpi	mdpi	tvdpi	hdpi	xhdpi	xxhdpi	Total
Small	3.3%						3.3%
Normal		6.5%	0.1%	41.0%	20.9%	15.6%	84.1%
Large	0.3%	4.8%	2.3%	0.6%	0.6%		8.6%
Xlarge		3.0%		0.3%	0.7%		4.0%
Total	3.6%	14.3%	2.4%	41.9%	22.2%	15.6%	



Data collected during a 7-day period ending on September 7, 2015.

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

Android Screen Sizes and Densities



Android Development Environment

Android Native Apps

1

JDK
(Java Development Kit)

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

2

Android Studio

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

1 JDK (Java Development Kit)

www.oracle.com/technetwork/java/javase/downloads/index.html

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Java SE Downloads

Java Platform (JDK) 8u60

NetBeans with JDK 8

Java Platform, Standard Edition

Java SE 8u60

This releases includes support for ARMv8 processors, Nashorn enhancements, and improvements to Deployment Rule Set functionality. JDK for ARM releases are now available on the same page as the downloads for other platforms. [Learn more](#) ▶

- Installation Instructions
- Release Notes
- Oracle License
- Java SE Products
- Third Party Licenses
- Certified System Configurations
- Readme Files
 - JDK ReadMe
 - JRE ReadMe

JDK
DOWNLOAD ▾

Server JRE
DOWNLOAD ▾

JRE
DOWNLOAD ▾

Java SDKs and Tools

- Java SE
- Java EE and Glassfish
- Java ME
- Java Card
- NetBeans IDE
- Java Mission Control

Java Resources

- Java APIs
- Technical Articles
- Demos and Videos
- Forums
- Java Magazine
- Java.net
- Developer Training
- Tutorials
- Java.com

October 25 - 29, 2015

2

Android Studio



Developers

Design

Develop

Distribute

Developer Console



Training

API Guides

Reference

Tools

Google Services

Samples

Download

Installing the SDK

Adding SDK Packages

Android Studio

Workflow

Tools Help

Build System

Performance Tools

Testing Tools

Support Library

Data Binding Library

Revisions

NDK



Android Studio

The official Android IDE

- Android Studio IDE
- Android SDK tools
- Android 6.0 (Marshmallow) Platform
- Android 6.0 emulator system image with Google APIs

DOWNLOAD ANDROID STUDIO FOR MAC



- [System Requirements](#)
- [Other Download Options](#)
- [Migrating to Android Studio](#)
- [Take a Survey](#)

Android Development Environment

Android Native Apps

1

JDK

(Java Development Kit)

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

2

ADT Bundle

(Android Developer Tools Bundle)
(Eclipse + ADT plugin + Android SDK
+ Android Platform + emulator)

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

1 JDK (Java Development Kit)

Java SE - Downloads | Oracle

www.oracle.com/technetwork/java/javase/downloads/index.html

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Overview Downloads Documentation Community Technologies Training

Java SE Downloads

 **DOWNLOAD**

Java Platform (JDK) 8u20

 **DOWNLOAD**

JDK 8u20 & NetBeans 8.0.1

Java Platform, Standard Edition

Java SE 8u20

This release of the Java Platform continues to improve upon the significant advances made in the JDK 8 release with new features, security and performance optimizations. Included are the new MSI Enterprise JRE Installer, the new Advanced Management Console, and JMC 5.4. [Learn more](#)

- Installation Instructions
- Release Notes
- Oracle License
- Java SE Products
- Third Party Licenses
- Certified System Configurations
- Readme Files
 - JDK ReadMe
 - JRE ReadMe

JDK **DOWNLOAD**

Server JRE **DOWNLOAD**


JRE **DOWNLOAD**

Java SDKs and Tools

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Java Resources

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- Demos and Videos
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- Java.net
- Developer Training
- Tutorials
- Java.com

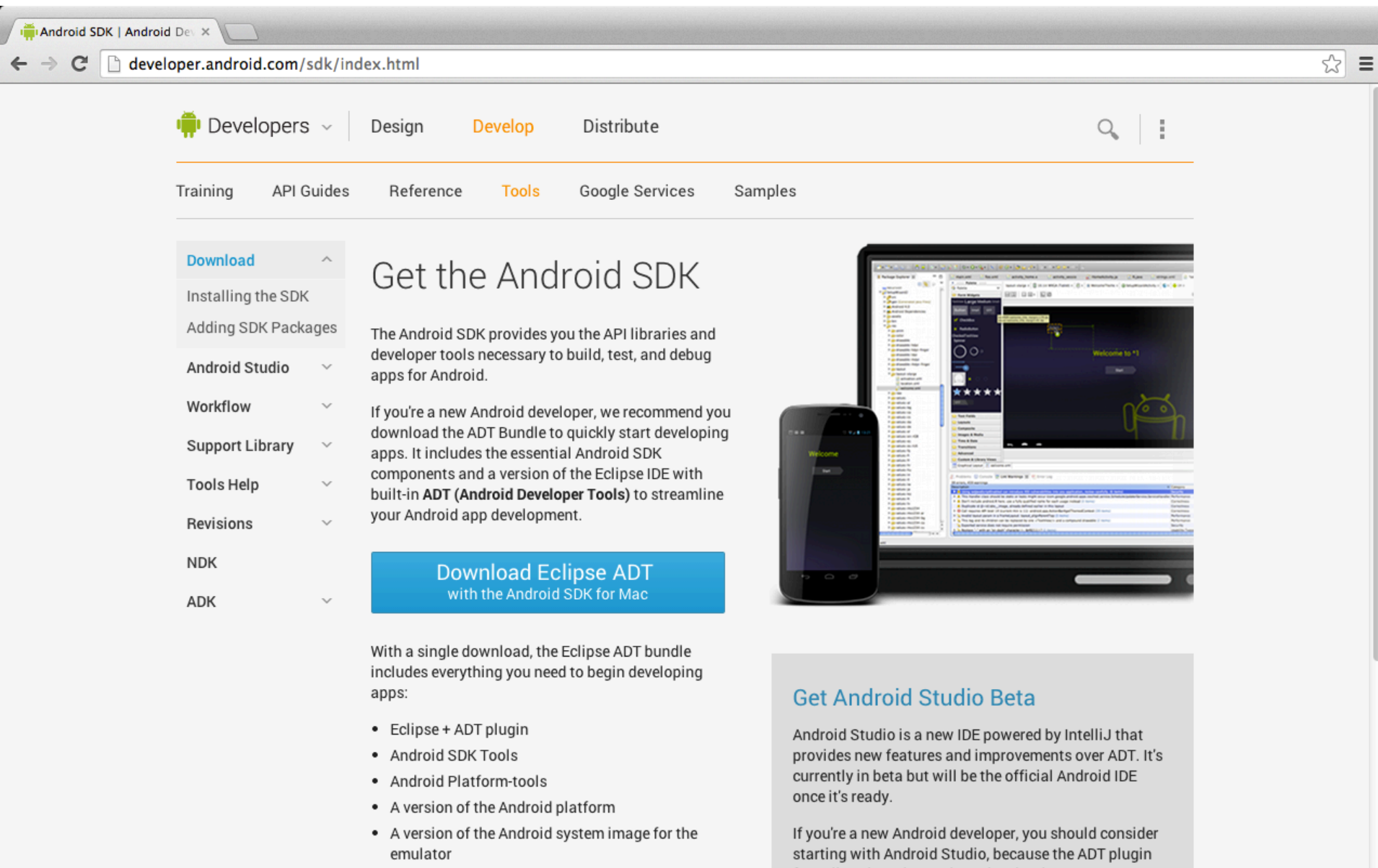
 **NEW!** Get it now for FREE! **Subscribe Today**

Webcast Introducing Java 8

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

2

ADT Bundle



The screenshot shows the Android Developer website at developer.android.com/sdk/index.html. The page features a navigation menu with 'Developers', 'Design', 'Develop', and 'Distribute'. Below this, there are links for 'Training', 'API Guides', 'Reference', 'Tools', 'Google Services', and 'Samples'. The main content area is titled 'Get the Android SDK' and includes a 'Download' button for 'Eclipse ADT with the Android SDK for Mac'. A list of links on the left includes 'Installing the SDK', 'Adding SDK Packages', 'Android Studio', 'Workflow', 'Support Library', 'Tools Help', 'Revisions', 'NDK', and 'ADK'. A list of features for the ADT bundle is provided, and a section for 'Get Android Studio Beta' is also visible.

Android SDK | Android Dev x

developer.android.com/sdk/index.html

Developers | Design | **Develop** | Distribute

Training | API Guides | Reference | **Tools** | Google Services | Samples

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
- A version of the Android system image for the emulator

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.

If you're a new Android developer, you should consider starting with Android Studio, because the ADT plugin for Eclipse is no longer in active development.



Option 1. Eclipse ADT Bundle

Option 2. Android Studio



Eclipse ADT Bundle



Android Studio

Building Your First Android App

1. Download the Android SDK.
 - <http://developer.android.com/sdk/index.html>
2. Install the ADT plugin for Eclipse
3. Download the latest SDK tools and platforms using the SDK Manager.

ADT Bundle

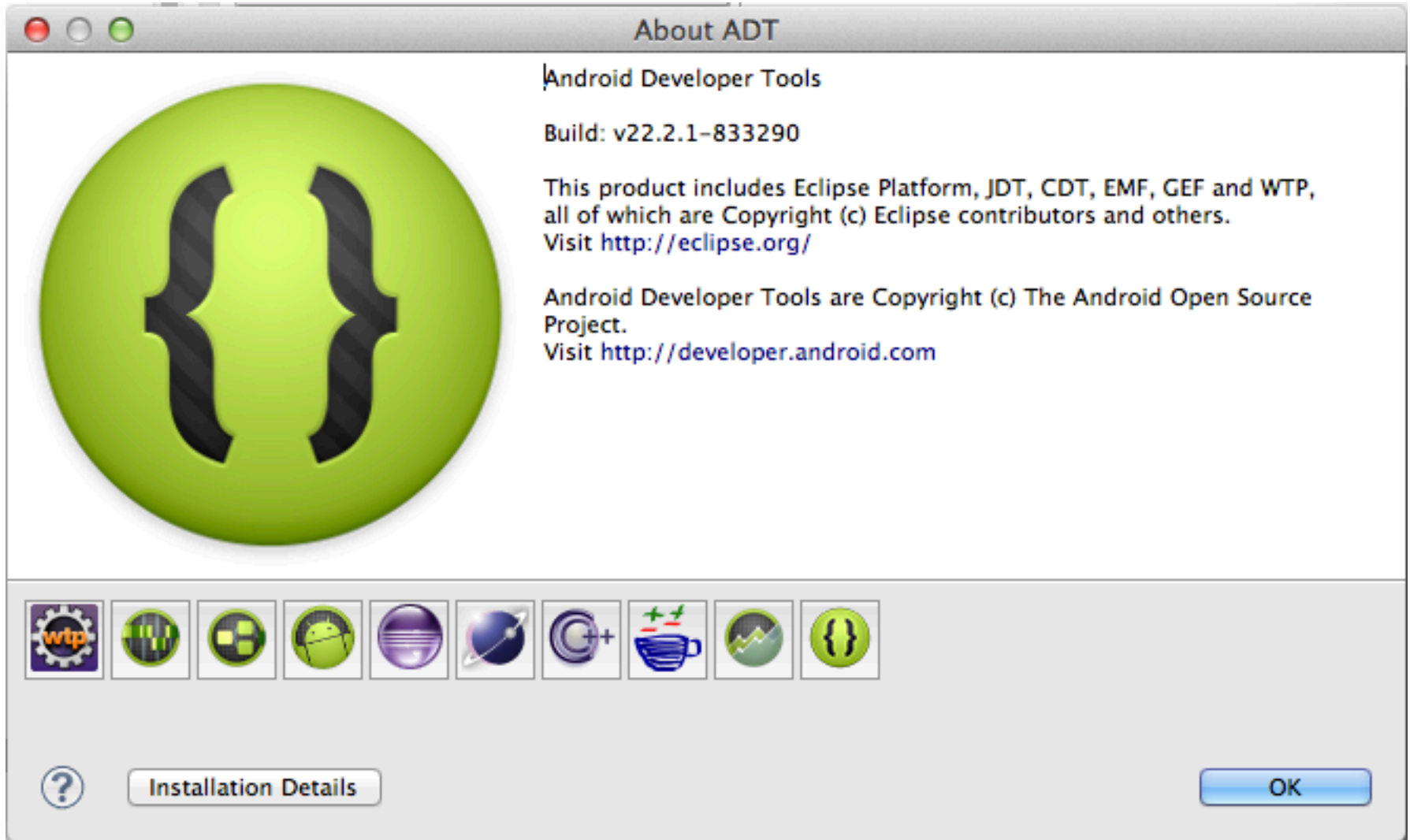
(Android Developer Tools Bundle)
(Eclipse + ADT plugin + Android SDK
+ Android Platform + emulator)

ADT Bundle

ADT (Android Developer Tools)

- With a single download, the ADT Bundle includes everything you need to begin developing apps:
 1. Eclipse + ADT plugin
 2. Android SDK Tools
 3. Android Platform-tools
 4. The latest Android platform
 5. The latest Android system image for the **emulator**

ADT



Get the Android SDK Eclipse ADT Bundle

The screenshot shows a web browser window with the URL `developer.android.com/sdk/index.html#download`. The page features a navigation bar with 'Developers', 'Design', 'Develop', and 'Distribute'. Below this is a secondary navigation bar with 'Training', 'API Guides', 'Reference', 'Tools', 'Google Services', and 'Samples'. A left sidebar contains a 'Download' menu with sub-items: 'Installing the SDK', 'Adding SDK Packages', 'Android Studio', 'Workflow', 'Support Library', 'Tools Help', 'Revisions', 'NDK', and 'ADK'. The main content area is titled 'Get the Android SDK' and includes a warning: 'Before installing the Android SDK, you must agree to the following terms and conditions.' Below this is a scrollable box titled 'Terms and Conditions' containing the text: 'This is the Android Software Development Kit License Agreement' and '1. Introduction'. The introduction section includes three numbered paragraphs: 1.1 defining the SDK, 1.2 defining 'Android', and 1.3 defining 'Google'. At the bottom of the page, there is a checked checkbox 'I have read and agree with the above terms and conditions' and a blue button labeled 'Download Eclipse ADT with the Android SDK for Mac'. A status bar at the very bottom shows the download URL: `https://dl.google.com/android/adt/adt-bundle-mac-x86_64-20140702.zip`.

Android SDK | Android Dev x

developer.android.com/sdk/index.html#download

Developers ▾ Design Develop Distribute

Training API Guides Reference Tools Google Services Samples

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

Get the Android SDK

Before installing the Android SDK, you must agree to the following terms and conditions.

Terms and Conditions

This is the Android Software Development Kit License Agreement

1. Introduction

1.1 The Android Software Development Kit (referred to in this License Agreement as the "SDK" and specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of this License Agreement. This License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.

1.2 "Android" means the Android software stack for devices, as made available under the Android Open Source Project, which is located at the following URL: <http://source.android.com/>, as updated from time to time.

1.3 "Google" means Google Inc., a Delaware corporation with principal place of business at 1600 Amphitheatre Parkway, Mountain View, CA 94043, United States.

I have read and agree with the above terms and conditions

Download Eclipse ADT with the Android SDK for Mac

https://dl.google.com/android/adt/adt-bundle-mac-x86_64-20140702.zip

Installing the Eclipse ADT Bundle

1. Unpack the ZIP file (named **adt-bundle-
<os_platform>.zip**) and save it to an appropriate location, such as a "**Development**" directory in your home directory.
2. Open the **adt-bundle-
<os_platform>/eclipse/** directory and launch Eclipse.

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.
- If you're a new Android developer, you should consider starting with Android Studio, because the **ADT plugin for Eclipse** is no longer in active development.

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

Installing the Eclipse ADT Bundle

The Eclipse ADT Bundle provides everything you need to start developing apps, including the Android SDK tools and a version of the Eclipse IDE with built-in ADT (Android Developer Tools) to streamline your Android app development.

If you didn't download the Eclipse ADT bundle, go [download the Eclipse ADT bundle now](#), or switch to the [Android Studio install](#) or [stand-alone SDK Tools install](#) instructions.

To set up the ADT Bundle:

1. Unpack the ZIP file (named `adt-bundle-<os_platform>.zip`) and save it to an appropriate location, such as a "Development" directory in your home directory.
2. Open the `adt-bundle-<os_platform>/eclipse/` directory and launch **Eclipse**.

Caution: Do not move any of the files or directories from the `adt-bundle-<os_platform>` directory. If you move the `eclipse/` or `sdk/` directory, ADT will not be able to locate the SDK and you'll need to manually update the ADT preferences.

Eclipse with ADT is now ready and loaded with the Android developer tools, but there are still a couple packages you should add to make your Android SDK complete.


[CONTINUE: ADDING SDK PACKAGES >](#)

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

Adding SDK Packages

By default, the Android SDK does not include everything you need to start developing. The SDK separates tools, platforms, and other components into packages you can download as needed using the [Android SDK Manager](#). So before you can start, there are a few packages you should add to your Android SDK.

To start adding packages, launch the Android SDK Manager in one of the following ways:

- In Eclipse or Android Studio, click **SDK Manager**  in the toolbar.
- If you're not using Eclipse or Android Studio:
 - Windows: Double-click the `SDK Manager.exe` file at the root of the Android SDK directory.
 - Mac/Linux: Open a terminal and navigate to the `tools/` directory in the Android SDK, then execute `android sdk`.

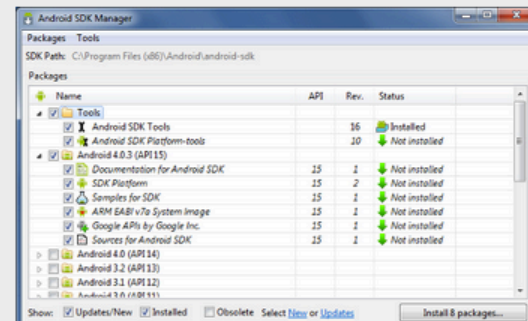
When you open the SDK Manager for the first time, several packages will be selected by default. Leave these selected, but be sure you have everything you need to get started by following these steps:

1. Get the latest SDK tools

As a minimum when setting up the Android SDK, you should download the latest tools and Android platform:

1. Open the Tools directory and select:
 - **Android SDK Tools**
 - **Android SDK Platform-tools**
 - **Android SDK Build-tools** (highest version)

2. Open the first Android X.X folder (the latest version) and select:



1. Get the latest SDK tools

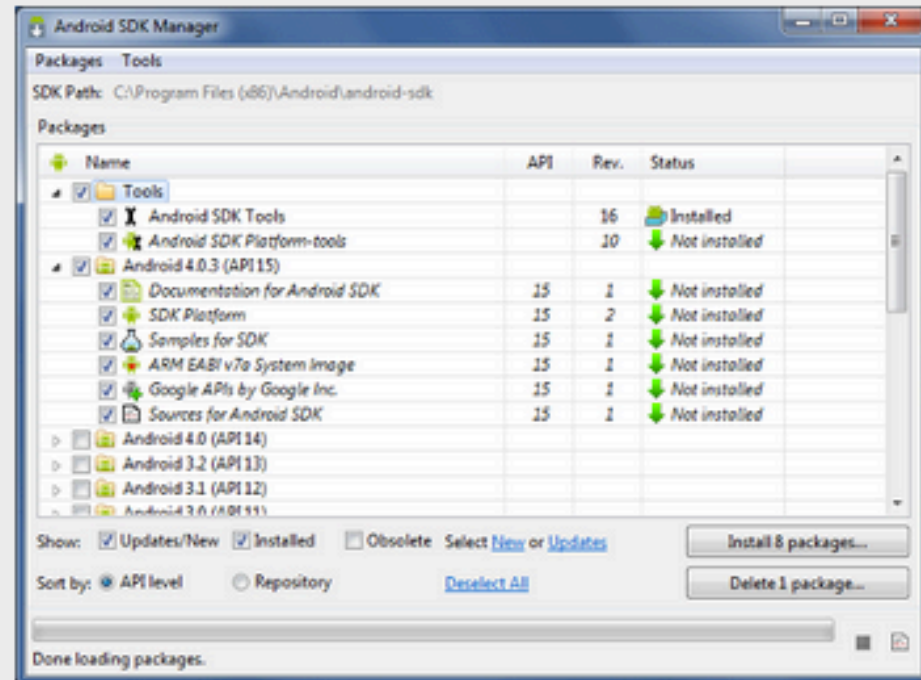
As a minimum when setting up the Android SDK, you should download the latest tools and Android platform:

1. Open the Tools directory and select:

- **Android SDK Tools**
- **Android SDK Platform-tools**
- **Android SDK Build-tools** (highest version)

2. Open the first Android X.X folder (the latest version) and select:

- **SDK Platform**
- A system image for the emulator, such as **ARM EABI v7a System Image**



2. Get the support library for additional APIs

The [Android Support Library](#) provides an extended set of APIs that are compatible with most versions of Android.

Open the **Extras** directory and select:

- **Android Support Repository**
- **Android Support Library**

The support library is required for:

- [Android Wear](#)
- [Android TV](#)
- [Google Cast](#)

It also provides these popular APIs:

- [Navigation drawer](#)
- [Swipe views](#)
- [Backward-compatible action bar](#)

3. Get Google Play services for even more APIs

To develop with Google APIs, you need the Google Play services package:

Open the **Extras** directory and select:

- **Google Repository**
- **Google Play services**

Note: Google Play services APIs are not available on all Android-powered devices, but are available on all devices with Google Play Store. To use these APIs in the Android emulator, you must also install the the **Google APIs** system image from the latest Android X.X directory in the SDK Manager.

The Google Play services APIs provide a variety of features and services for your Android apps, such as:

- [User authentication](#)
- [Google Maps](#)
- [Google Cast](#)
- [Games achievements and leaderboards](#)
- [And much more](#)

4. Install the packages

Once you've selected all the desired packages, continue to install:

1. Click **Install X packages**.
2. In the next window, double-click each package name on the left to accept the license agreement for each.
3. Click **Install**.

The download progress is shown at the bottom of the SDK Manager window. **Do not exit the SDK Manager** or it will cancel the download.

5. Build something!

With the above packages now in your Android SDK, you're ready to build apps for Android. As new tools and other APIs become available, simply launch the SDK Manager to download the new packages for your SDK.

Here are a few options for how you should proceed:

Get started

If you're new to Android development, learn the basics of Android apps by following the guide to [Building Your First App](#).

Build for wearables

If you're ready to start building apps for Android wearables, see the guide to [Building Apps for Android Wear](#).

Use Google APIs

To start using Google APIs, such as Maps or Play Game services, see the guide to [Setting Up Google Play Services](#).

- Getting Started ^
- Building Your First App** ^
- Creating an Android Project
- Running Your Application
- Building a Simple User Interface
- Starting Another Activity
- Adding the Action Bar v
- Supporting Different Devices v
- Managing the Activity Lifecycle v
- Building a Dynamic UI with Fragments v
- Saving Data v
- Interacting with Other Apps v
- Building Apps with Content Sharing v
- Building Apps with Multimedia v
- Building Apps with Graphics & Animation v

Building Your First App

Welcome to Android application development!

This class teaches you how to build your first Android app. You'll learn how to create an Android project and run a debuggable version of the app. You'll also learn some fundamentals of Android app design, including how to build a simple user interface and handle user input.

Before you start this class, be sure you have your development environment set up. You need to:

1. Download the Android SDK.
2. Install the ADT plugin for Eclipse (if you'll use the Eclipse IDE).
3. Download the latest SDK tools and platforms using the SDK Manager.

Note: Make sure you install the most recent versions of the ADT plugin and the Android SDK before you start this class. The procedures described in this class may not apply to earlier versions.

If you haven't already done these tasks, start by downloading the [Android SDK](#) and following the install steps. Once you've finished the setup, you're ready to begin this class.

This class uses a tutorial format that incrementally builds a small Android app that teaches you some fundamental concepts about Android development, so it's important that you follow each step.

[Start the first lesson >](#)

[GET STARTED >](#)

DEPENDENCIES AND PREREQUISITES

- [Android SDK](#)
- [ADT Plugin 22.6.2 or higher](#) (if you're using Eclipse)

Android App Building Blocks

1

Activity

2

Service

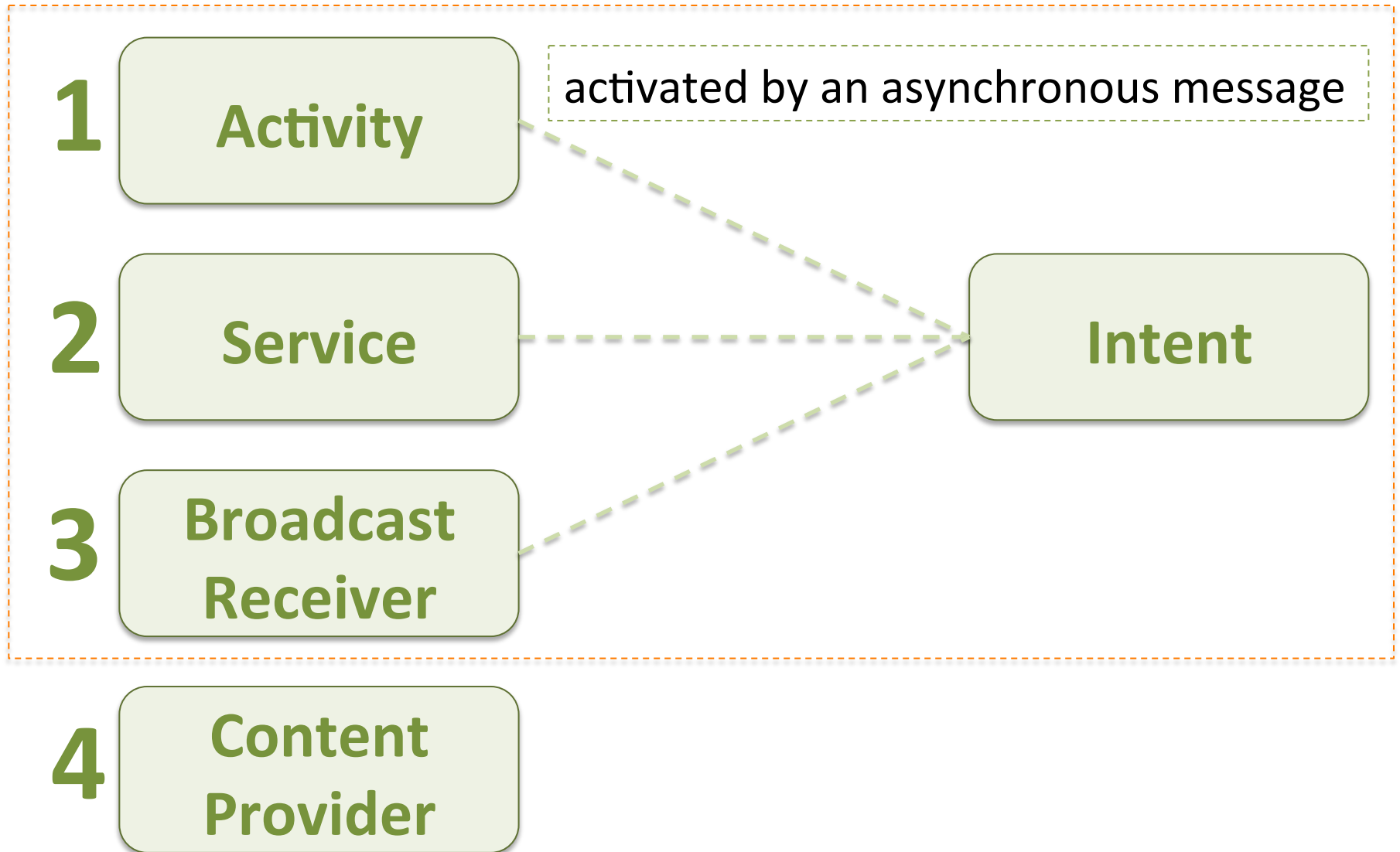
3

**Broadcast
Receiver**

4

**Content
Provider**

Android App Building Blocks



Android App Building Blocks

- 1 Activity** a **single screen** with a user interface
- 2 Service**
- 3 Broadcast Receiver**
- 4 Content Provider**

Android App Building Blocks

1

Activity

2

Service

runs in the **background** to perform long-running operations or to perform work for remote processes

3

Broadcast
Receiver

4

Content
Provider

Android App Building Blocks

1

Activity

2

Service

3

Broadcast
Receiver

responds to system-wide broadcast
announcements

4

Content
Provider

Android App Building Blocks

1

Activity

2

Service

3

**Broadcast
Receiver**

4

**Content
Provider**

manages a shared set of application data

Developing Android Apps

1. Screen Layout Design: Views and Layouts

- Graphical Layout
- activity_main.xml

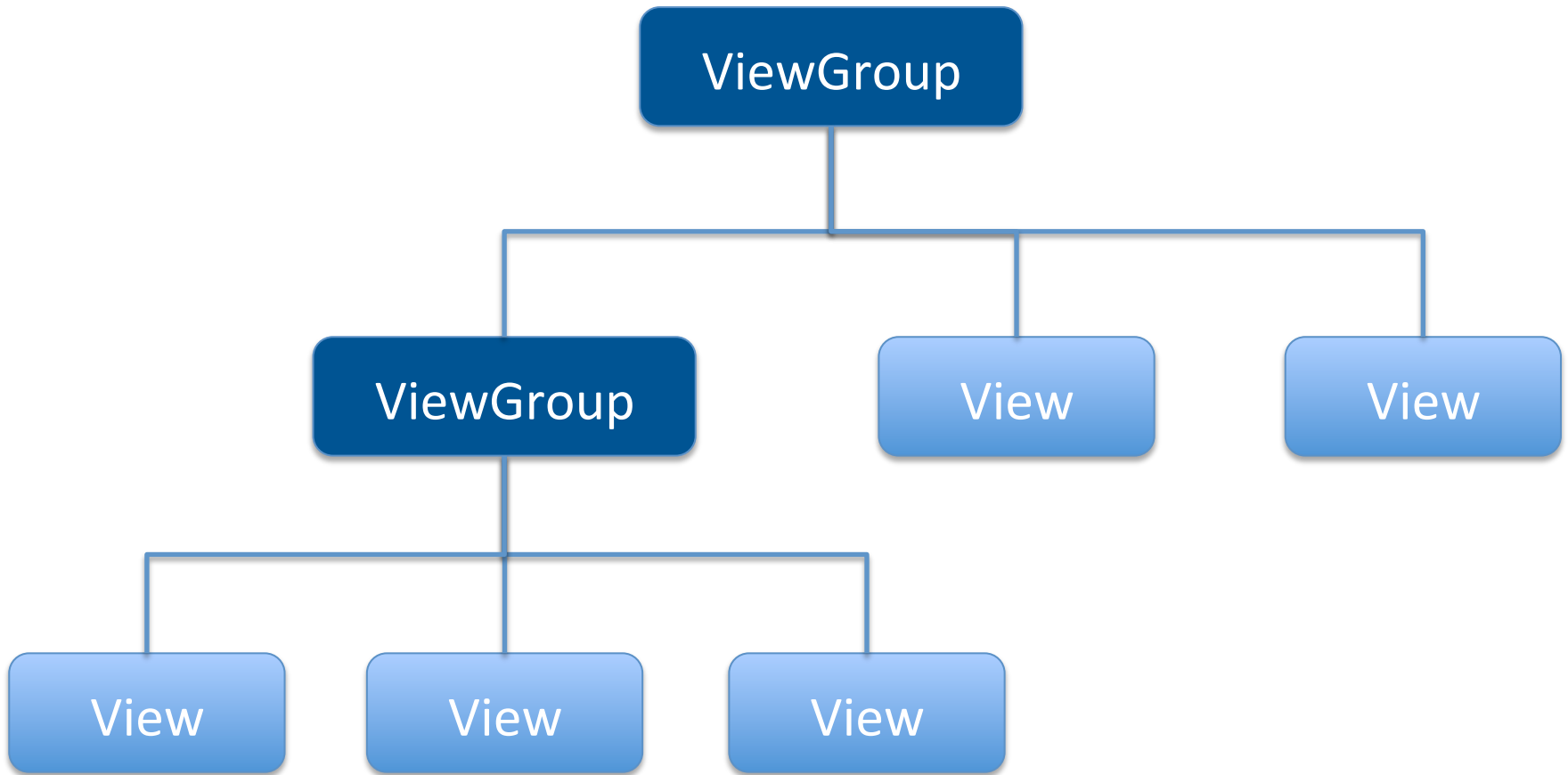
2. App Components (Activity) Programming

- MainActivity.java

Building a Simple User Interface

- Create a Linear Layout
- Add a Text Field
- Add String Resources
- Add a Button
- Make the Input Box Fill in the Screen Width

Building a Simple User Interface



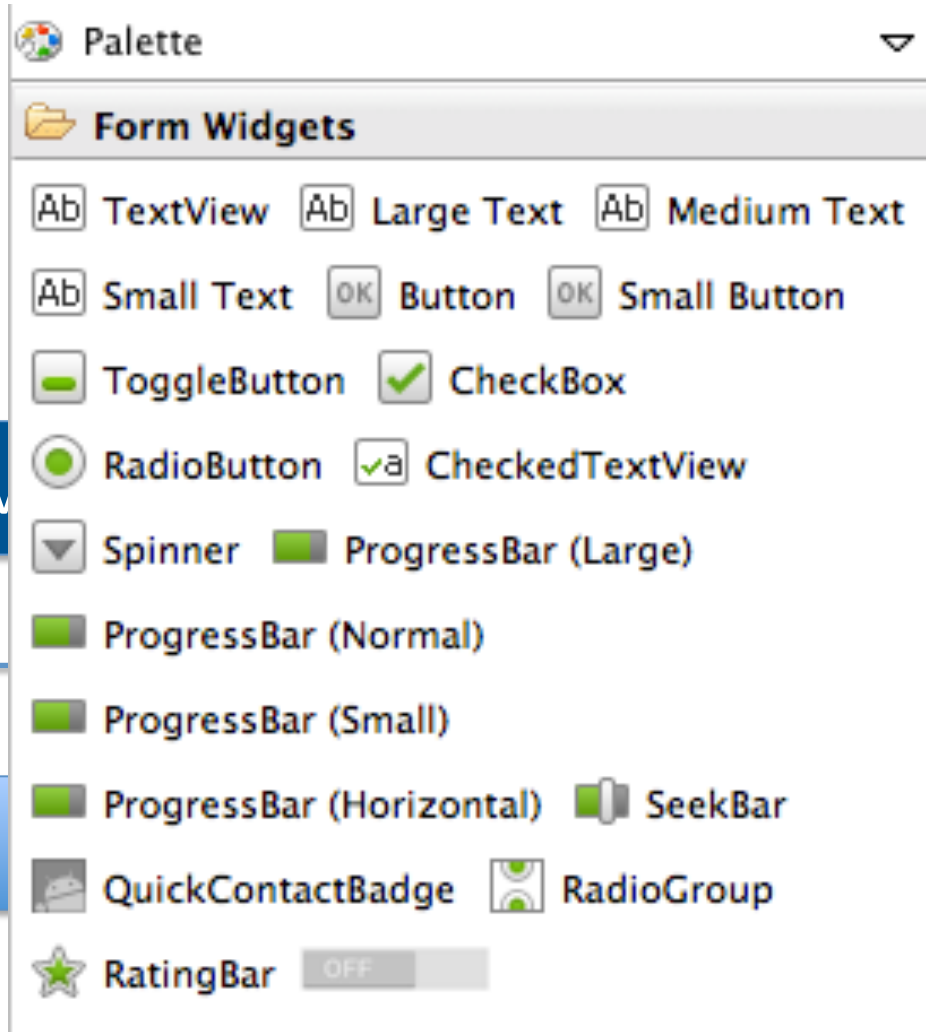
Building a Simple User Interface

View

TextView

Button

View

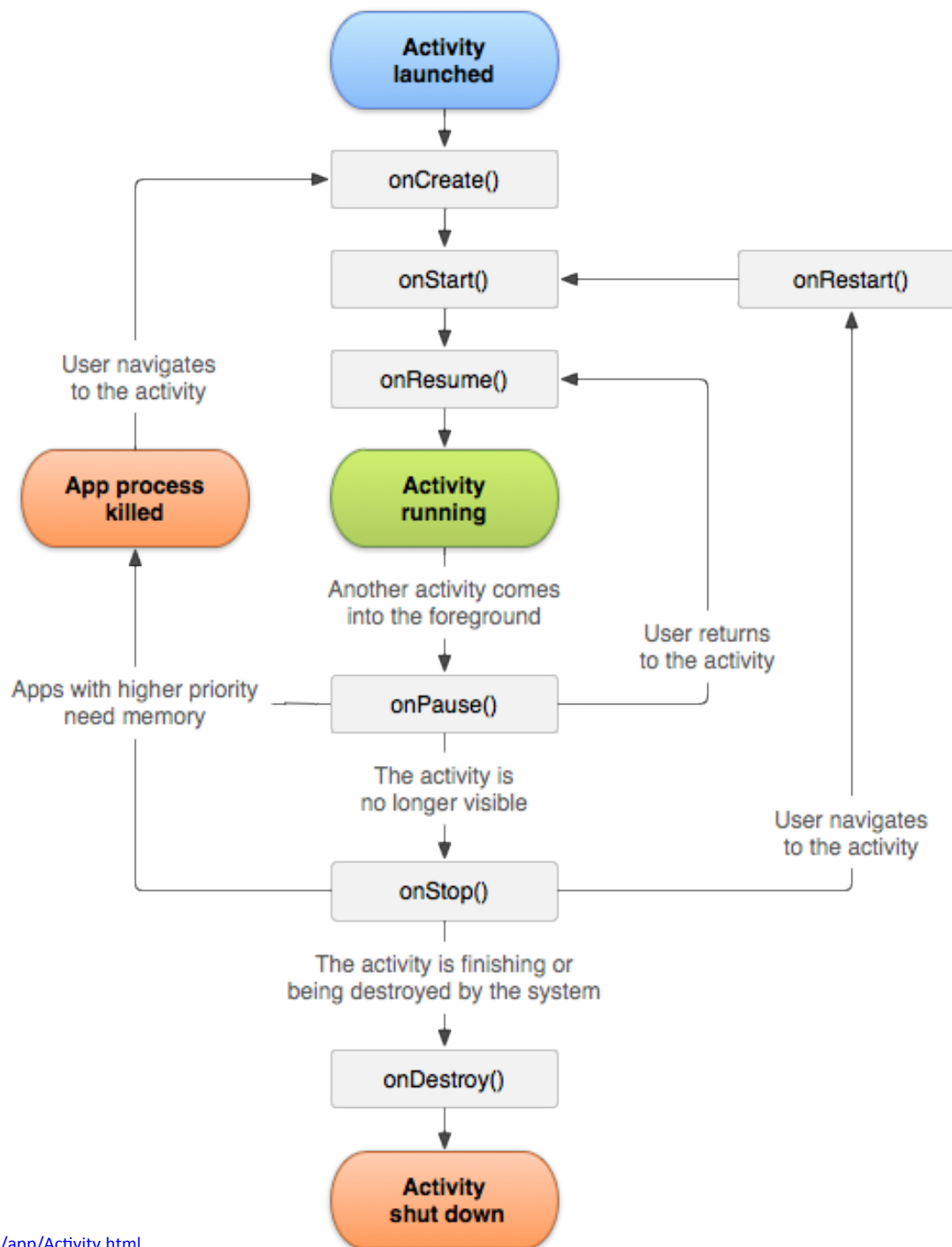


View

View

View

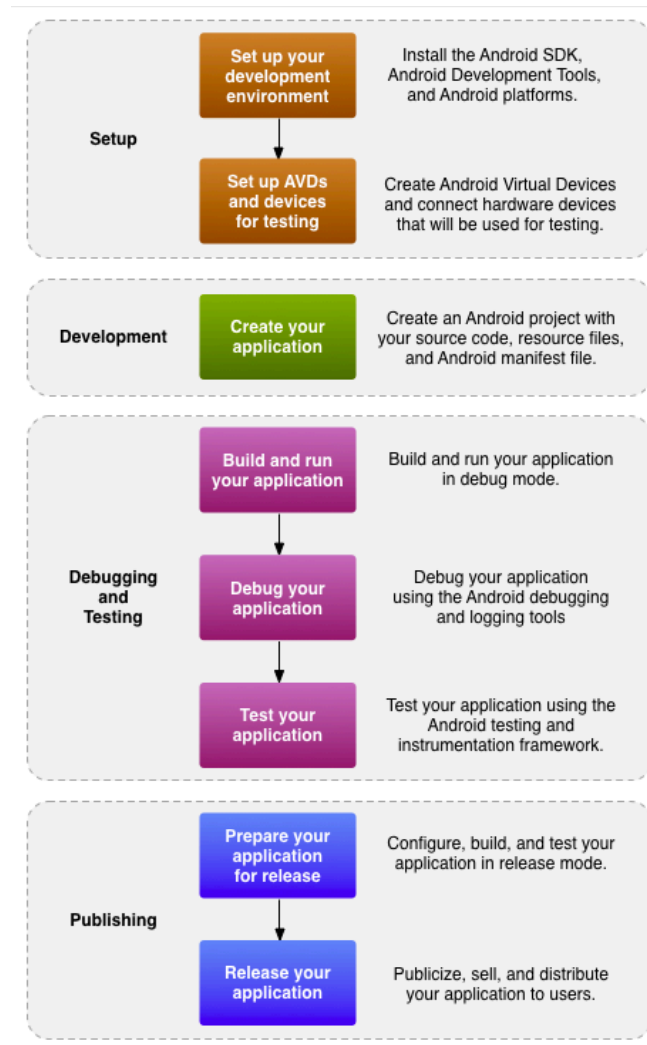
Android App Activity Lifecycle



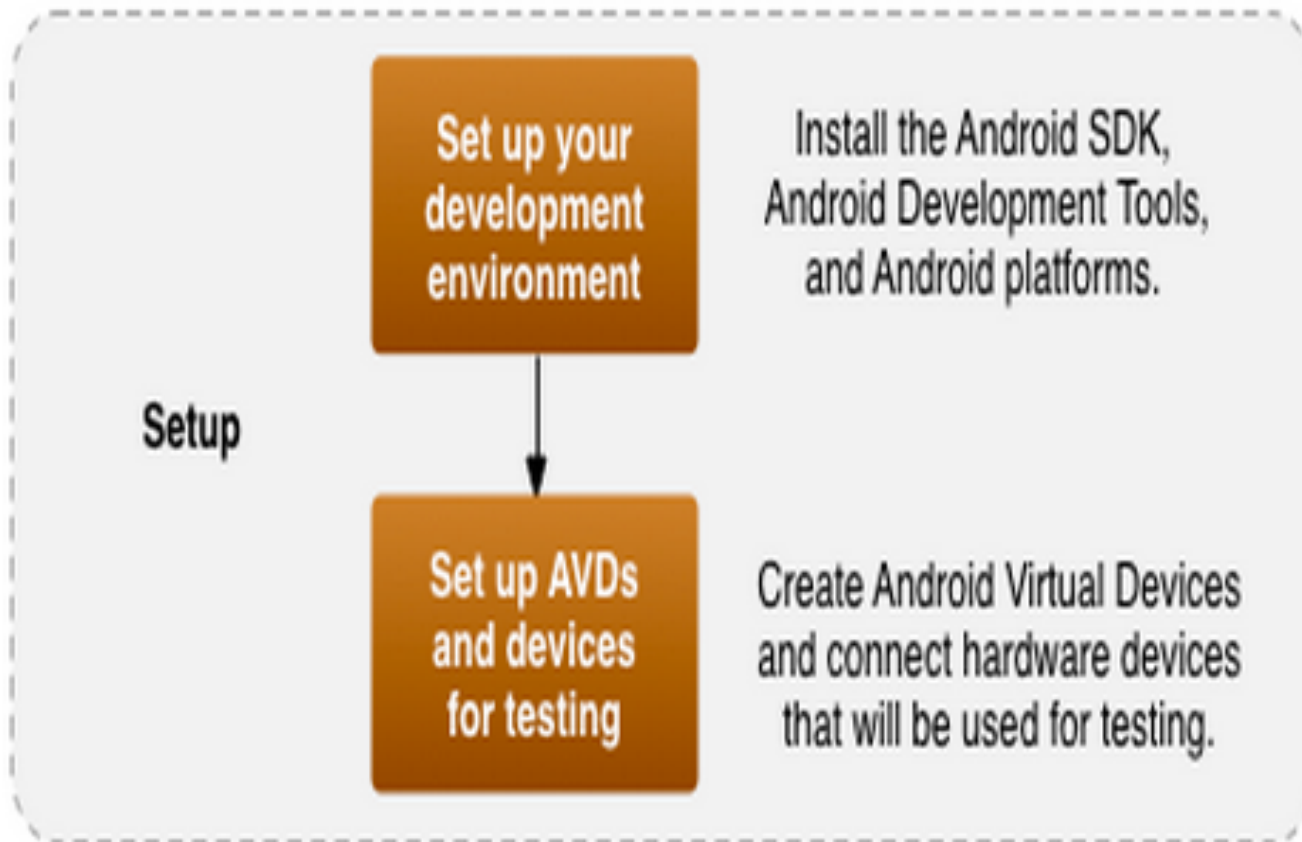
Source:

<http://developer.android.com/reference/android/app/Activity.html>

The development process for Android applications



1. Setup



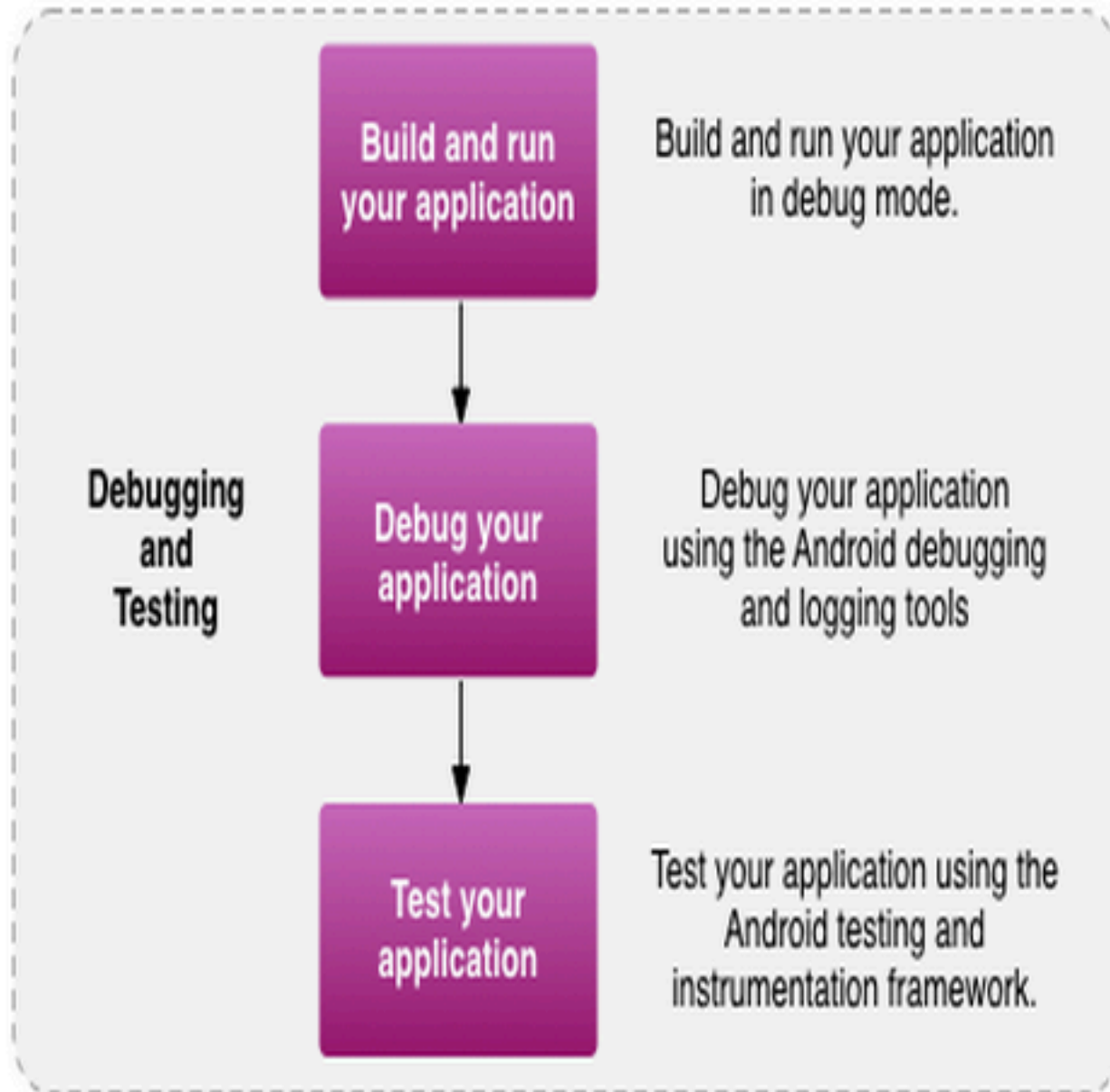
2. Development

Development

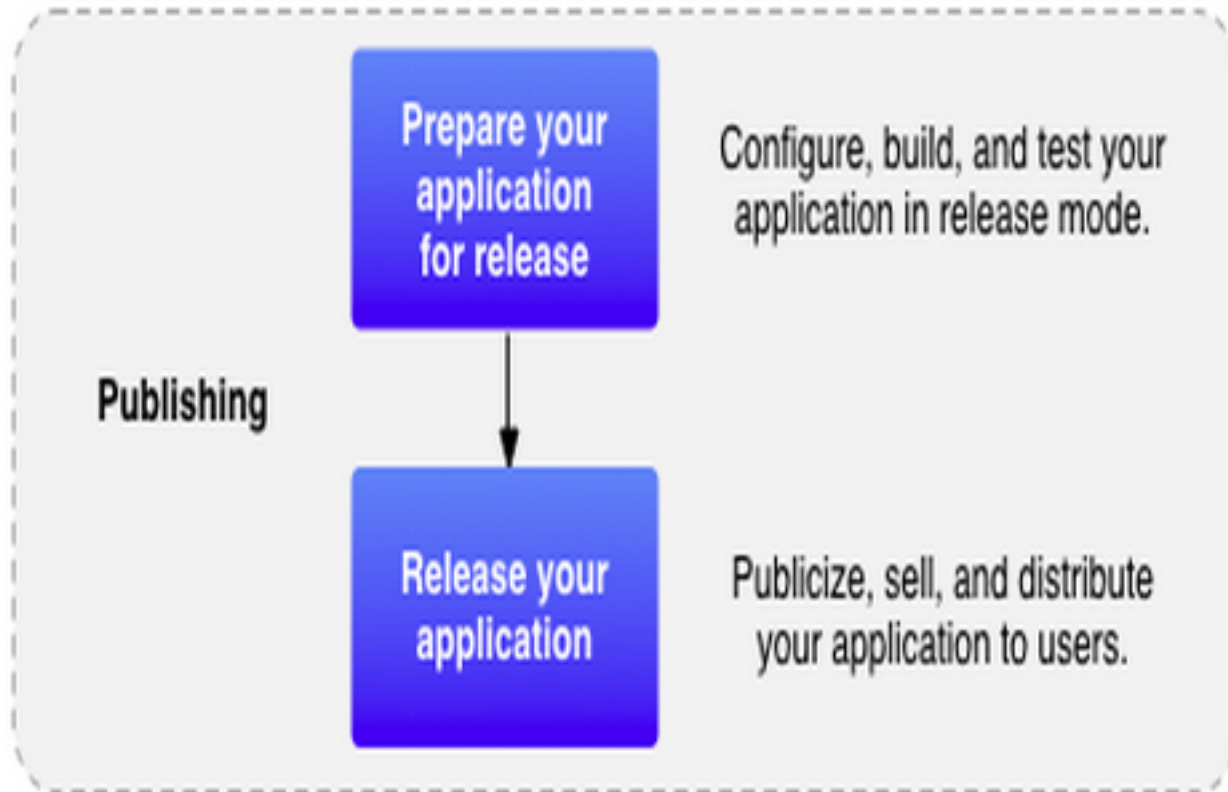
**Create your
application**

Create an Android project with your source code, resource files, and Android manifest file.

3. Debugging and Testing

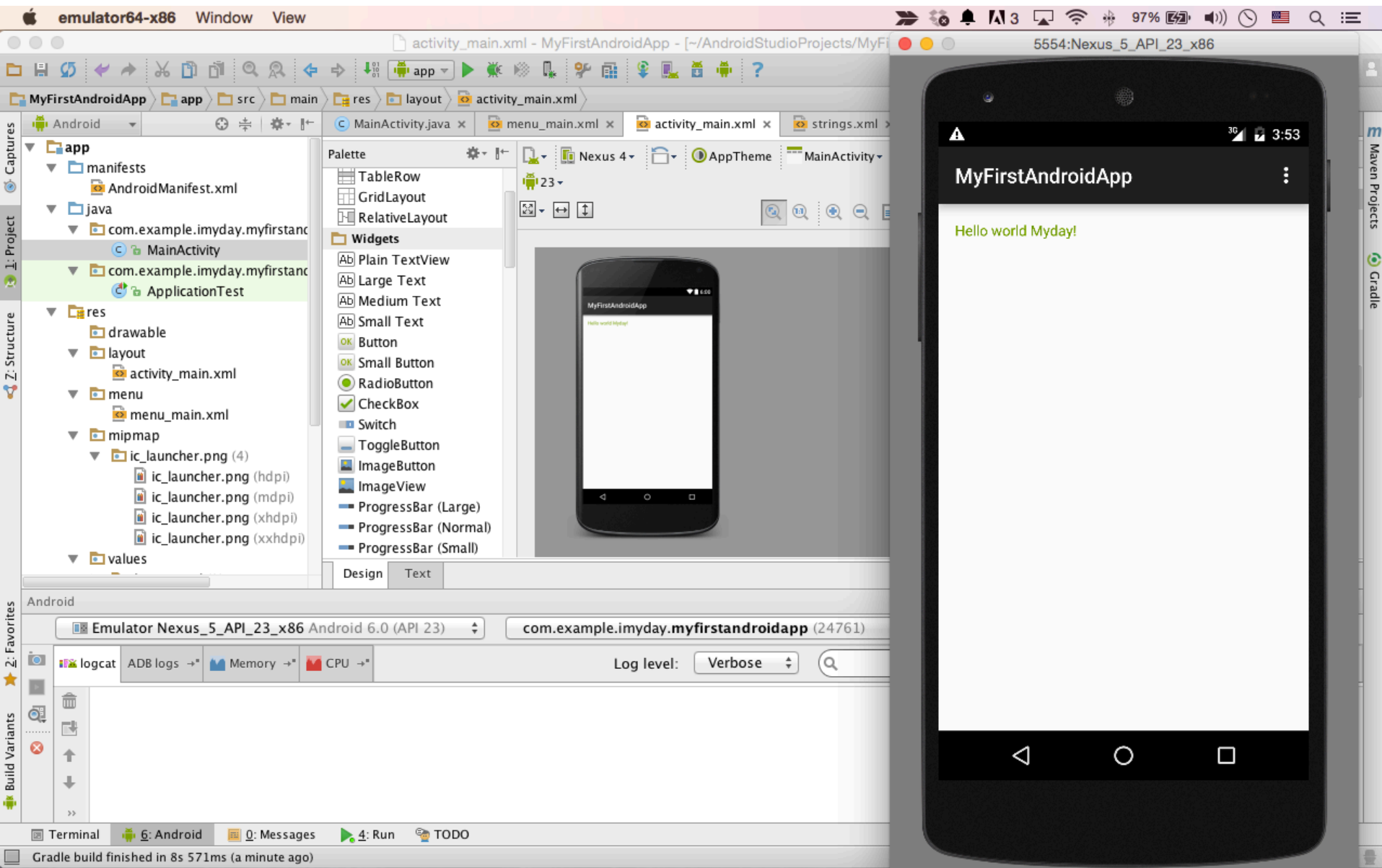


4. Publishing



Demo:
Building Your First Android App
with
Android Studio

My First Android App



Java SE Development Kit (JDK)

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Java Platform, Standard Edition

Java SE 8u60

This releases includes support for ARMv8 processors, Nashorn enhancements, and improvements to Deployment Rule Set functionality. JDK for ARM releases are now available on the same page as the downloads for other platforms. [Learn more](#)

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Solaris SPARC 64-bit	99.02 MB	jdk-8u60-solaris-sparcv9.tar.gz
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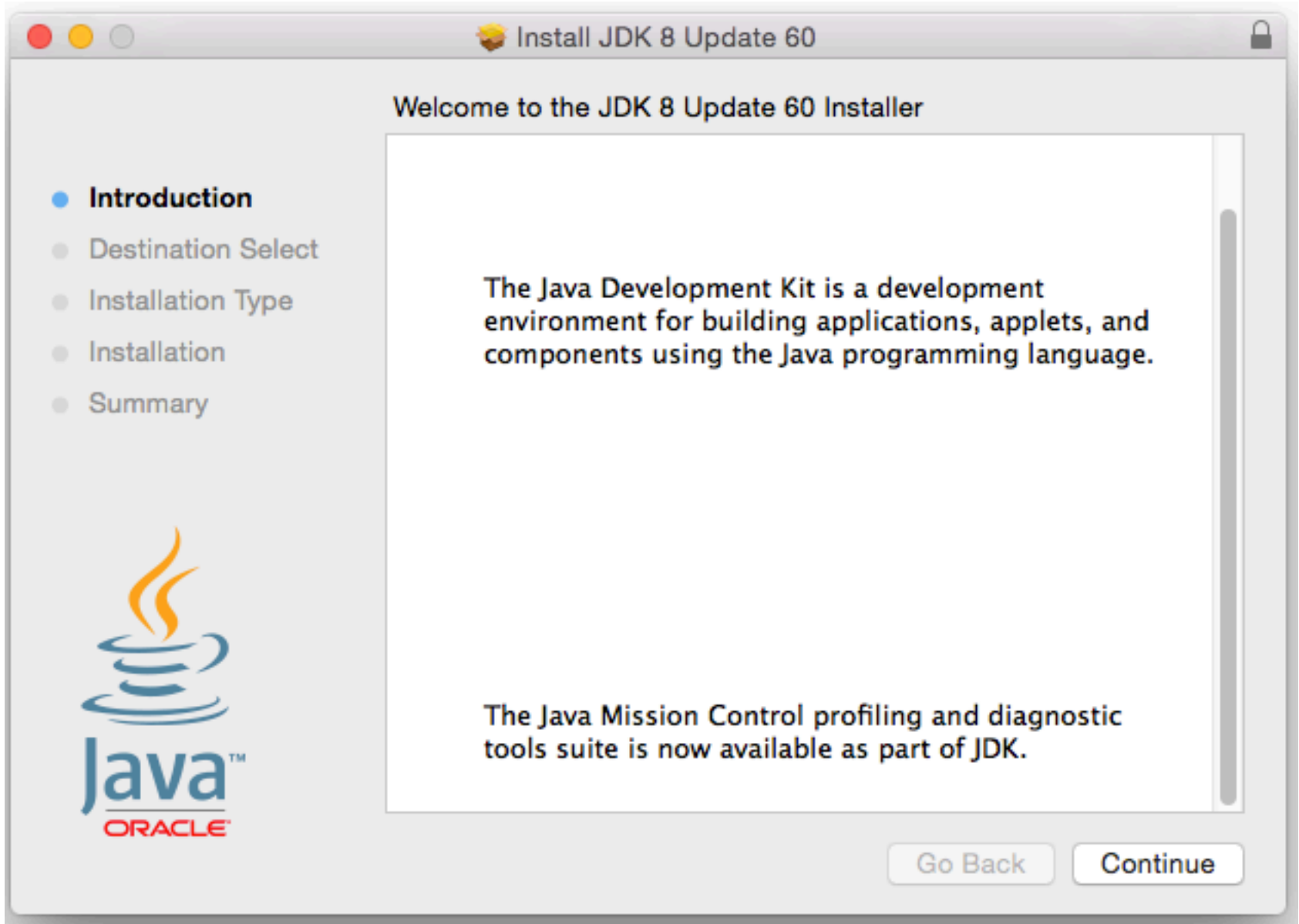
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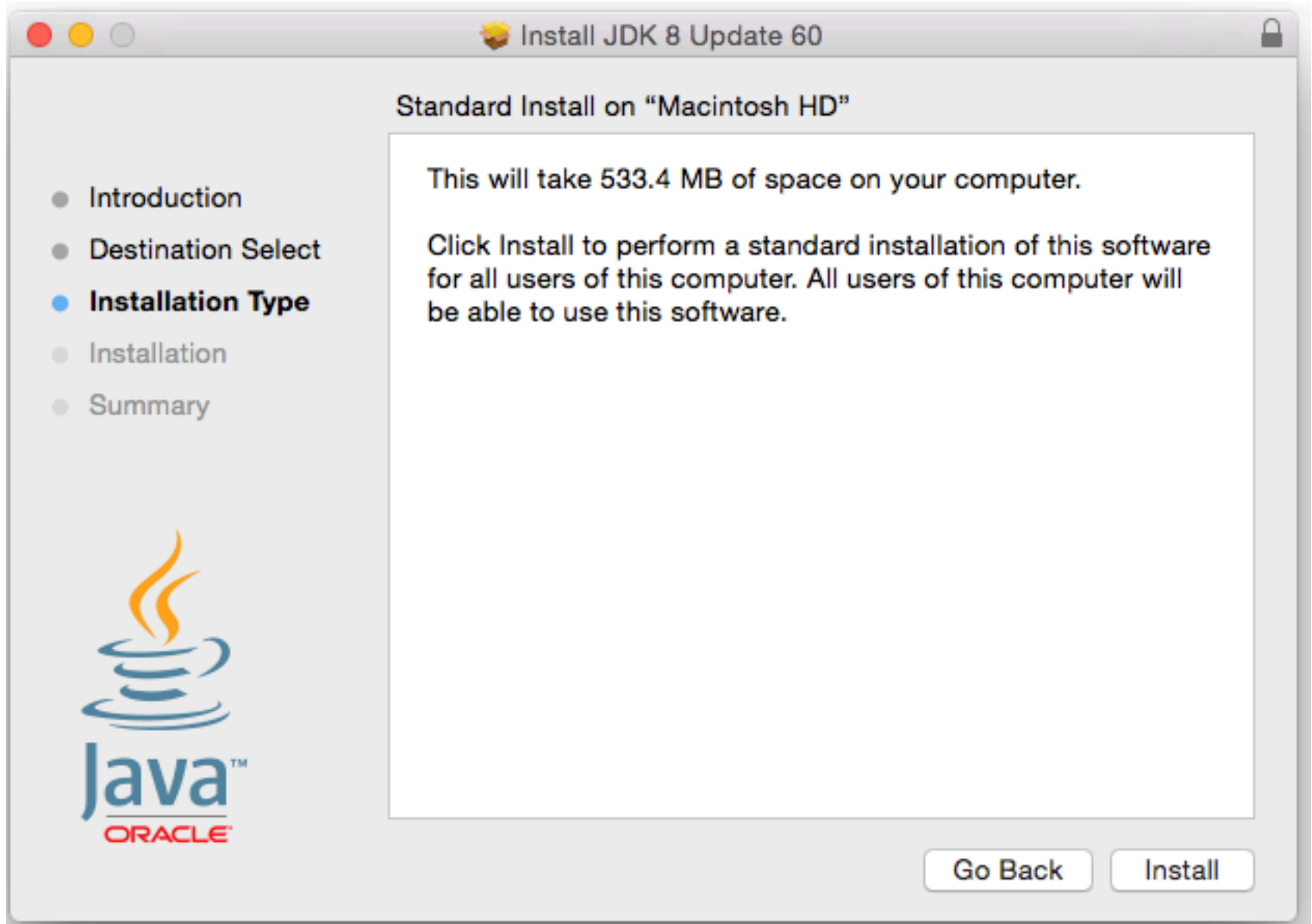
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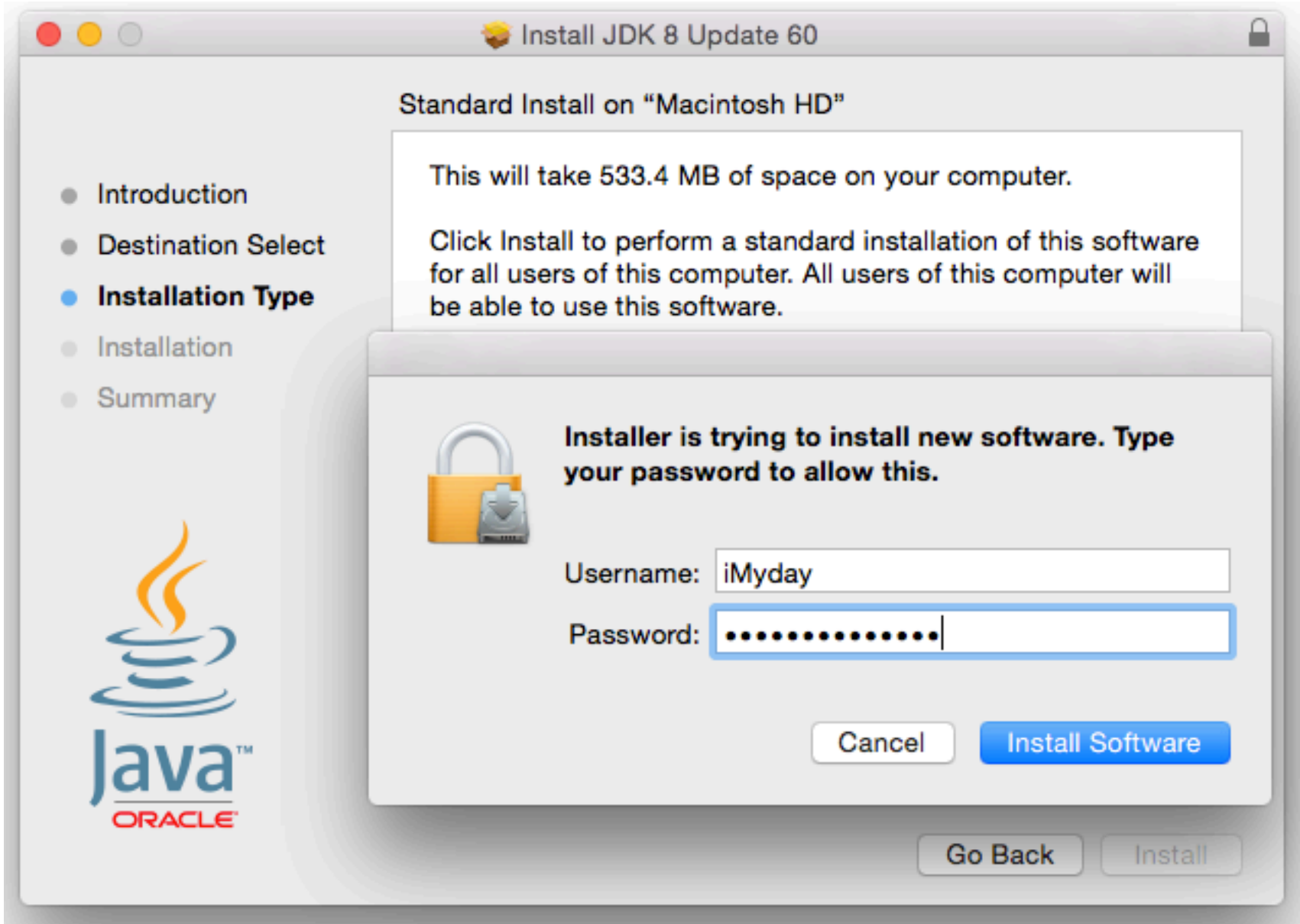
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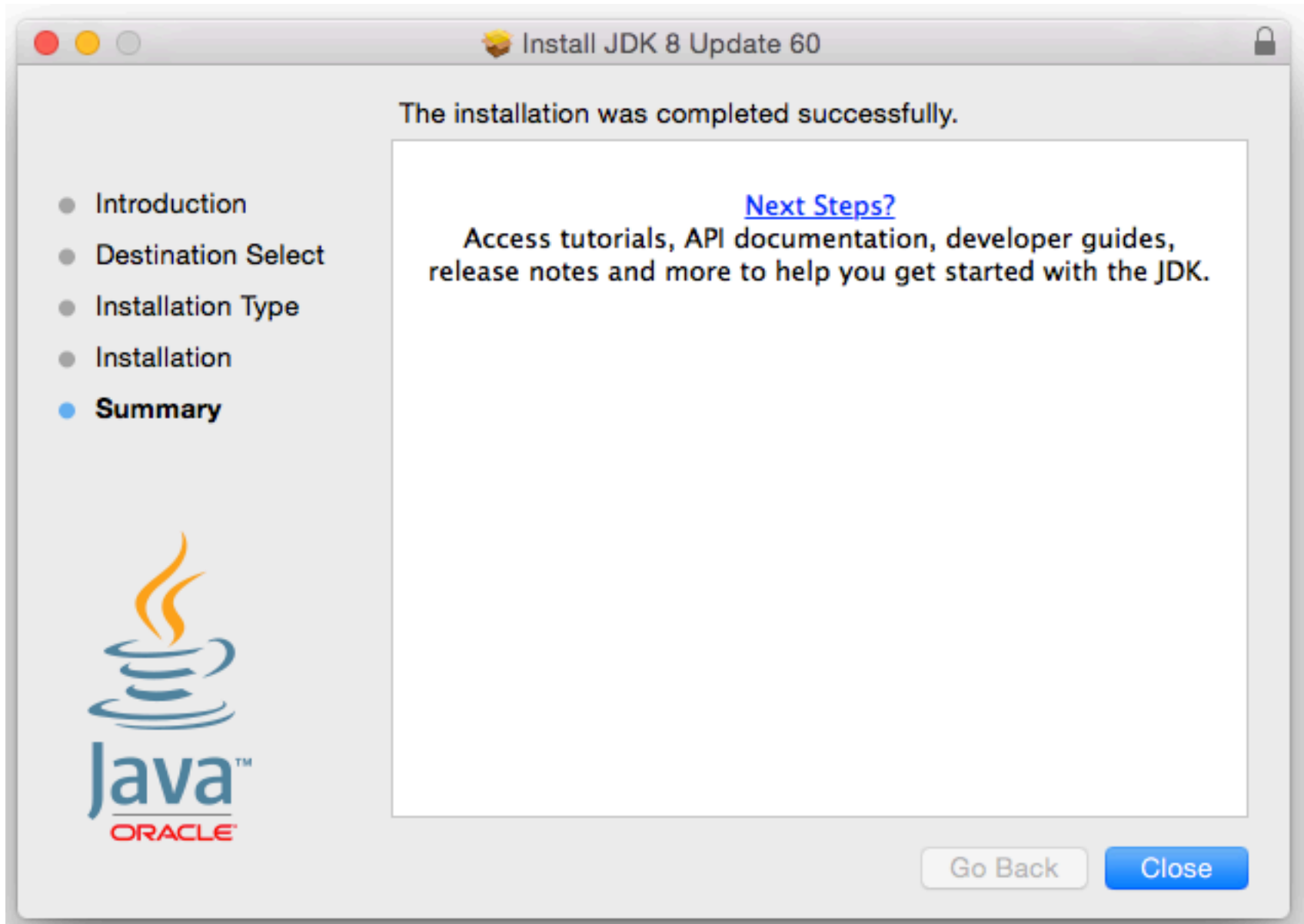
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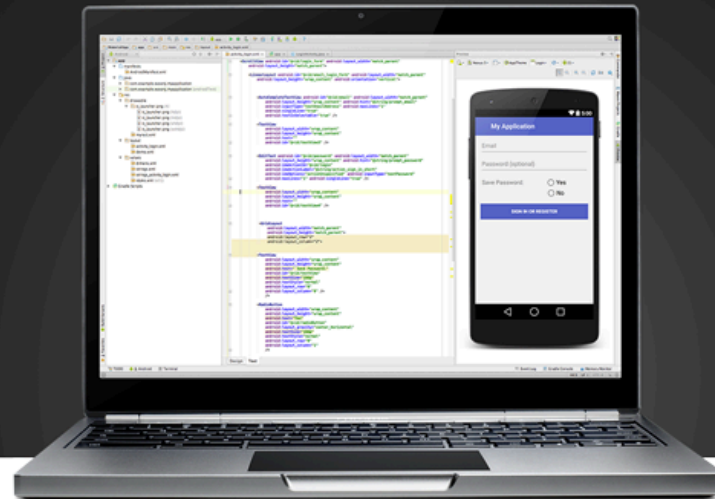


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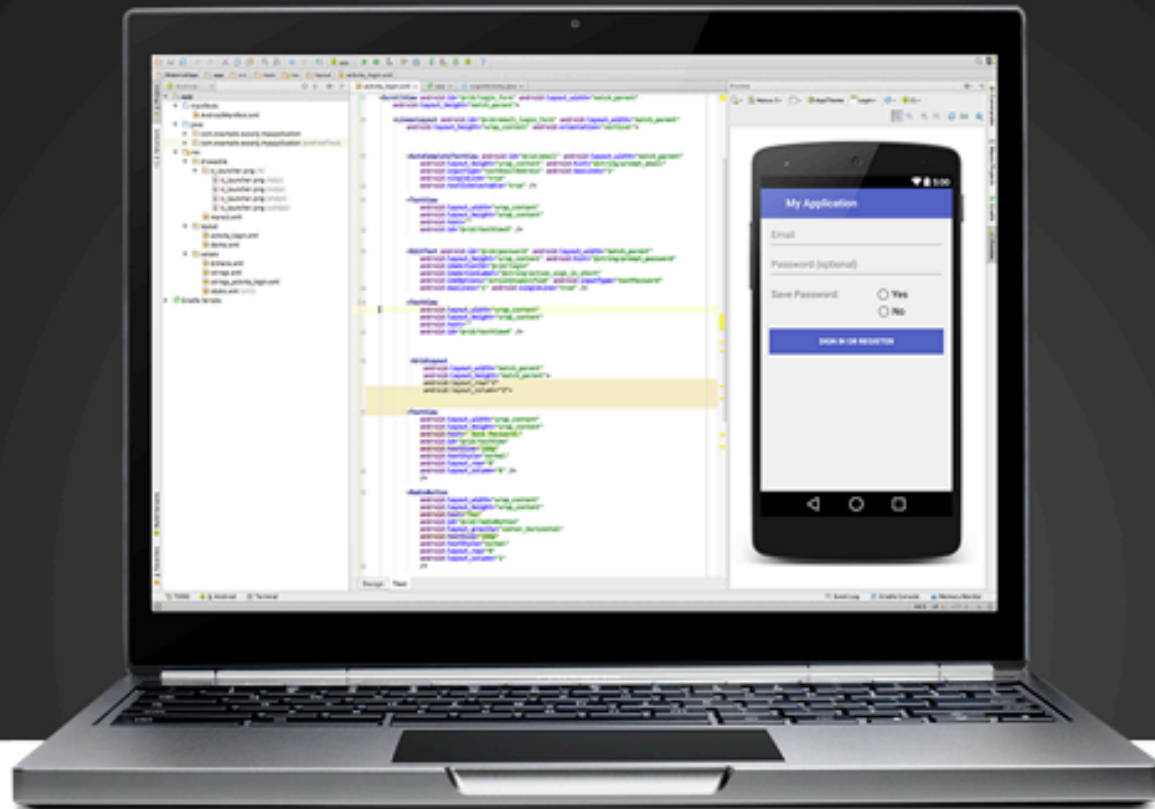


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Before installing Android Studio or the standalone SDK tools, you must agree to the following terms and conditions.

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This is the Android Software Development Kit License Agreement

1. Introduction

1.1 The Android Software Development Kit (referred to in this License Agreement as the "SDK" and specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of this License Agreement. This License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.

1.2 "Android" means the Android software stack for devices, as made available under the Android Open Source Project, which is located at the following URL: <http://source.android.com/>, as updated from time to time.

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Installing Android Studio

Android Studio provides everything you need to start developing apps for Android, including the Android Studio IDE and the Android SDK tools.

If you didn't download Android Studio, go [download Android Studio now](#), or switch to the [stand-alone SDK Tools install](#) instructions.

Before you set up Android Studio, be sure you have installed JDK 6 or higher (the JRE alone is not sufficient)—JDK 7 is required when developing for Android 5.0 and higher. To check if you have JDK installed (and which version), open a terminal and type `javac -version`. If the JDK is not available or the version is lower than 6, [go download JDK](#).

To set up Android Studio on Mac OSX:

[\[Show instructions for all platforms \]](#)

1. Launch the `.dmg` file you just downloaded.
2. Drag and drop Android Studio into the Applications folder.
3. Open Android Studio and follow the setup wizard to install any necessary SDK tools.

Depending on your security settings, when you attempt to open Android Studio, you might see a warning that says the package is damaged and should be moved to the trash. If this happens, go to **System Preferences > Security & Privacy** and under **Allow applications downloaded from**, select **Anywhere**. Then open Android Studio again.

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Installing Android Studio

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If you need use the Android SDK tools from a command line, you can access them at:

```
/Users/<user>/Library/Android/sdk/
```

Android Studio is now ready and loaded with the Android developer tools, but there are still a couple packages you should



Android Studio





Welcome

Android Studio

Welcome! This wizard will set up your development environment for Android Studio.
Additionally, the wizard will help port existing Android apps into Android Studio
or create a new Android application project.



Cancel

Previous

Next

Finish



Install Type

Choose the type of setup you want for Android Studio:

Standard

Android Studio will be installed with the most common settings and options.
Recommended for most users.

Custom

You can customize installation settings and components installed.

Cancel

Previous

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Finish



Verify Settings

If you want to review or change any of your installation settings, click Previous.

Current Settings:

Total Download Size:

752 MB

Sdk Components to Download:

Android SDK Build-tools, revision 23.0.1	36.3 MB
Android SDK Platform-tools, revision 23.0.1	2.37 MB
Android SDK Tools, revision 24.4.0	97.1 MB
Android Support Repository, revision 20	131 MB
Google APIs Intel x86 Atom System Image, Google Inc. API 23, revision 7	331 MB
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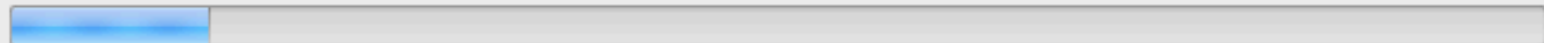
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Running Intel® HAXM installer

```
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (1%)
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (94%)
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (95%)
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (99%)
  Installed Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0
Installing Android SDK Platform-tools, revision 23.0.1
Stopping ADB server failed (code -1).
  Installed Android SDK Platform-tools, revision 23.0.1
Installing Sources for Android SDK, API 23, revision 1
  Installed Sources for Android SDK, API 23, revision 1
Installing Google APIs Intel x86 Atom System Image, Google Inc. API 23, revision 7
  Installed Google APIs Intel x86 Atom System Image, Google Inc. API 23, revision 7
Installing Android SDK Tools, revision 24.4.0
  Installed Android SDK Tools, revision 24.4.0
  Updated ADB to support the USB devices declared in the SDK add-ons.
  Stopping ADB server succeeded.
  Starting ADB server succeeded.
Done. 10 packages installed.
Android SDK is up to date.
Running Intel® HAXM installer
```



Downloading Components

```
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (1%)
Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (94%)
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Unzipping Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0 (99%)
  Installed Intel x86 Emulator Accelerator (HAXM installer), revision 5.4.0
Installing Android SDK Platform-tools, revision 23.0.1
Stopping ADB server failed (code -1).
  Installed Android SDK Platform-tools, revision 23.0.1
Installing Sources for Android SDK, API 23, revision 1
  Installed Sources for Android SDK, API 23, revision 1
Installing Google APIs Intel x86 Atom System Image, Google Inc. API 23, revision 7
  Installed Google APIs Intel x86 Atom System Image, Google Inc. API 23, revision 7
Installing Android SDK Tools, revision 24.4.0
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  Updated ADB to support the USB devices declared in the SDK add-ons.
  Stopping ADB server succeeded.
  Starting ADB server succeeded.
Done. 10 packages installed.
Android SDK is up to date.
Running Intel® HAXM installer
Silent installation Pass!
Creating Android virtual device
Android virtual device Nexus_5_API_23_x86 was successfully created
```



Welcome to Android Studio

Recent Projects

No Project Open Yet

Quick Start



Start a new Android Studio project



Open an existing Android Studio project



Import an Android code sample



Check out project from Version Control



Import project (Eclipse ADT, Gradle, etc.)



Configure



Docs and How-Tos





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Configure



SDK Manager



Preferences



Plugins



Import Settings



Export Settings



Check for Update



Project Defaults





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Recent Projects

No Project Open Yet

Project Defaults



Settings



Project Structure



Run Configurations

SDK Location

SDK Location

Android SDK location:

The directory where the Android SDK is located. This location will be used for new projects, and for existing projects that do not have a local.properties file with a sdk.dir property.

**JDK location:**

The directory where the Java Development Kit (JDK) is located.

**Android NDK location:**

The directory where the Android NDK is located. This location will be saved as ndk.dir property in the local.properties file.



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OK



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Open an existing Android Studio project



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Import project (Eclipse ADT, Gradle, etc.)



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New Project

Android Studio

Configure your new project

Application name:

Company Domain:

Package name: [Edit](#)

Project location: ...



New Project

Android Studio

Configure your new project

Application name:

Company Domain:

Package name: [Edit](#)

Project location: ...



Target Android Devices

Select the form factors your app will run on

Different platforms may require separate SDKs

 Phone and Tablet

Minimum SDK

API 15: Android 4.0.3 (IceCreamSandwich)

Lower API levels target more devices, but have fewer features available. By targeting API 15 and later, your app will run on approximately **94.0%** of the devices that are active on the Google Play Store.

[Help me choose](#) Wear

Minimum SDK

API 21: Android 5.0 (Lollipop)

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API 21: Android 5.0 (Lollipop)

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Minimum SDK

API 15: Android 4.0.3 (IceCreamSandwich)

✓ API 15: Android 4.0.3 (IceCreamSandwich)

API 16: Android 4.1 (Jelly Bean)

API 17: Android 4.2 (Jelly Bean)

API 18: Android 4.3 (Jelly Bean)

API 19: Android 4.4 (KitKat)

API 21: Android 5.0 (Lollipop)

API 22: Android 5.1 (Lollipop)

API 23: Android 6.0 (Marshmallow)

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Select the form factors your app will run on

Different platforms may require separate SDKs

 Phone and Tablet

Minimum SDK

- API 8: Android 2.2 (Froyo)
- API 5: Android 2.0 (Eclair)
- API 6: Android 2.0.1 (Eclair)
- API 7: Android 2.1 (Eclair)
- API 8: Android 2.2 (Froyo)
- API 9: Android 2.3 (Gingerbread)
- API 10: Android 2.3.3 (Gingerbread)
- API 11: Android 3.0 (Honeycomb)
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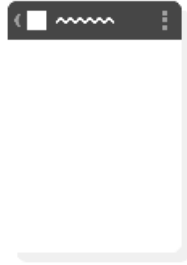
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Add an activity to Mobile



Add No Activity



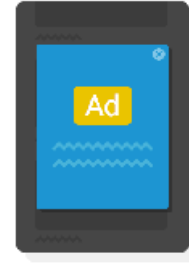
Blank Activity



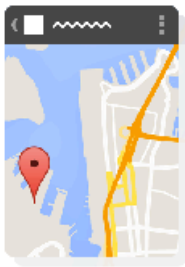
Blank Activity with Fragment



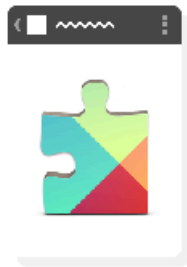
Fullscreen Activity



Google AdMob Ads Activity



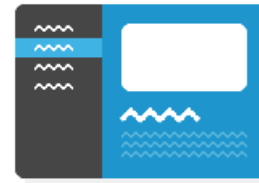
Google Maps Activity



Google Play Services Activity



Login Activity



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Navigation Drawer Activity

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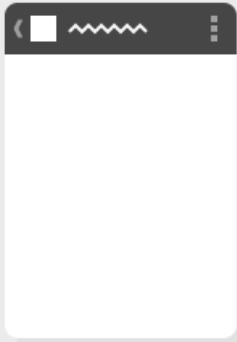
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Finish



Customize the Activity



Blank Activity

Creates a new blank activity with an action bar.

Activity Name:

Layout Name:

Title:

Menu Resource Name:

The name of the activity class to create




Welcome to Android Studio

Recent Projects


No Project Open Yet


Quick Start


 Start a new Android Studio project



Creating project...



Initializing Phone and Tablet

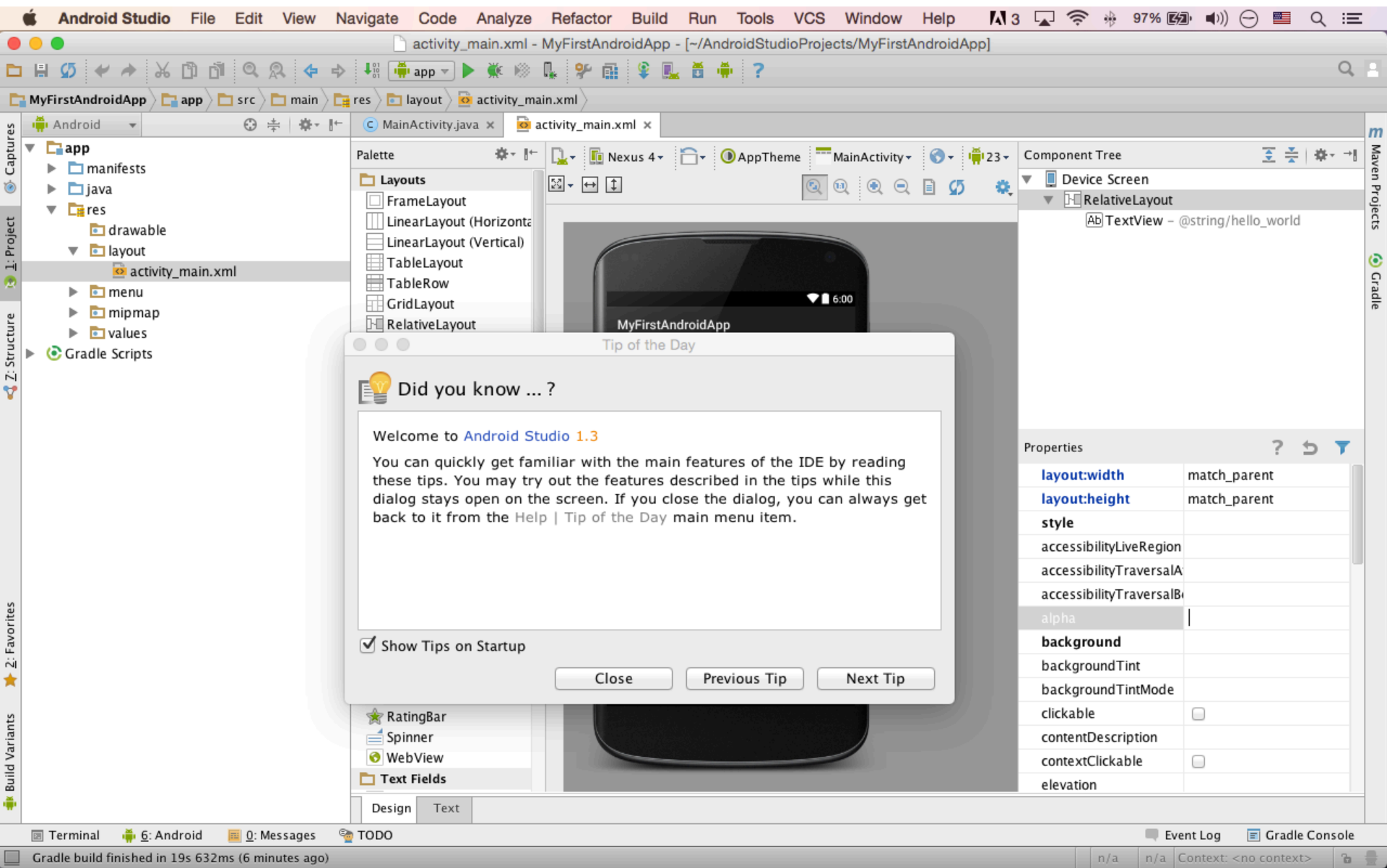


 VCS
Check out project from Version Control


 Import project (Eclipse ADT, Gradle, etc.)

 Configure 

 Docs and How-Tos 



Tip of the Day

 Did you know ... ?

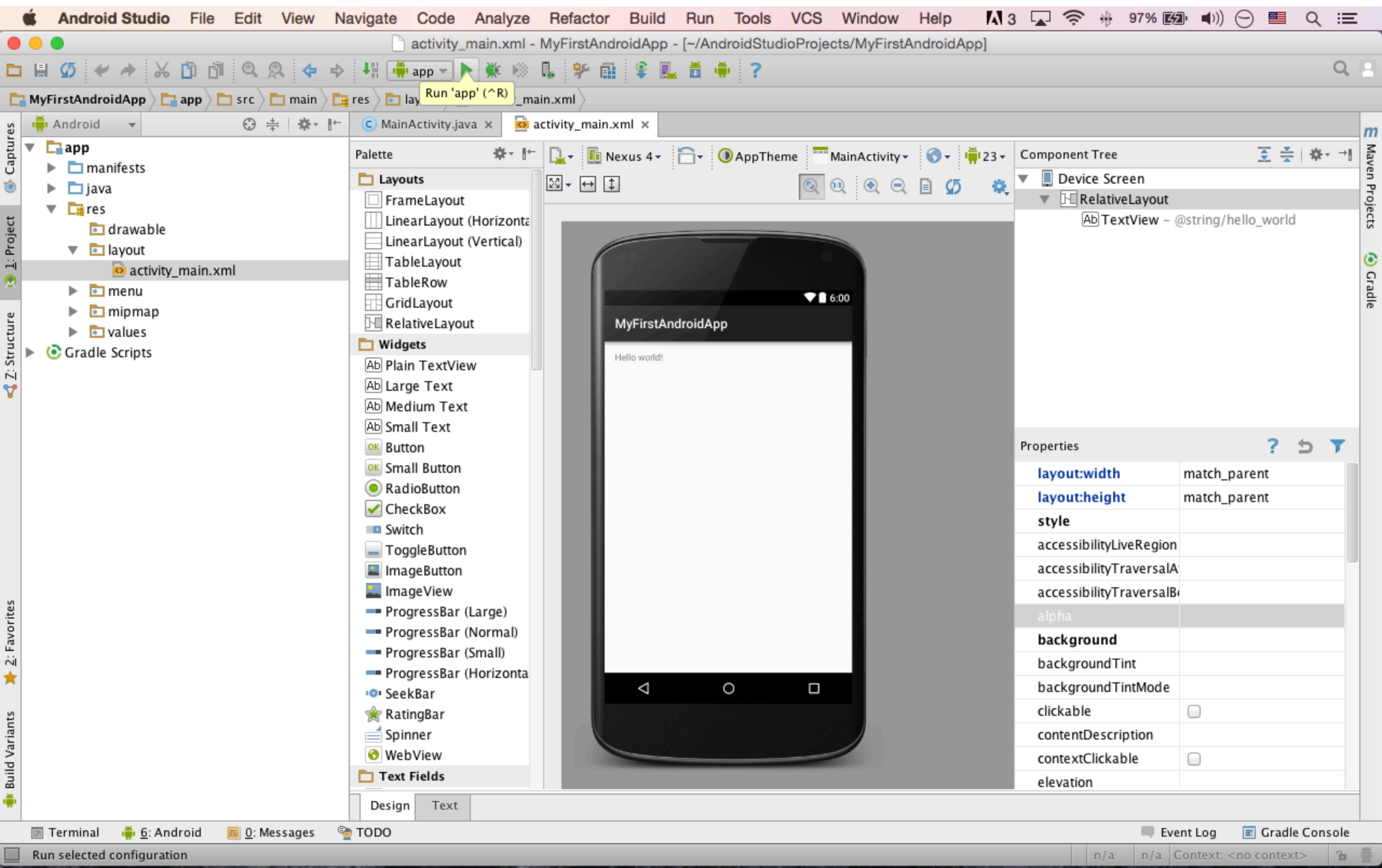
Welcome to **Android Studio 1.3**

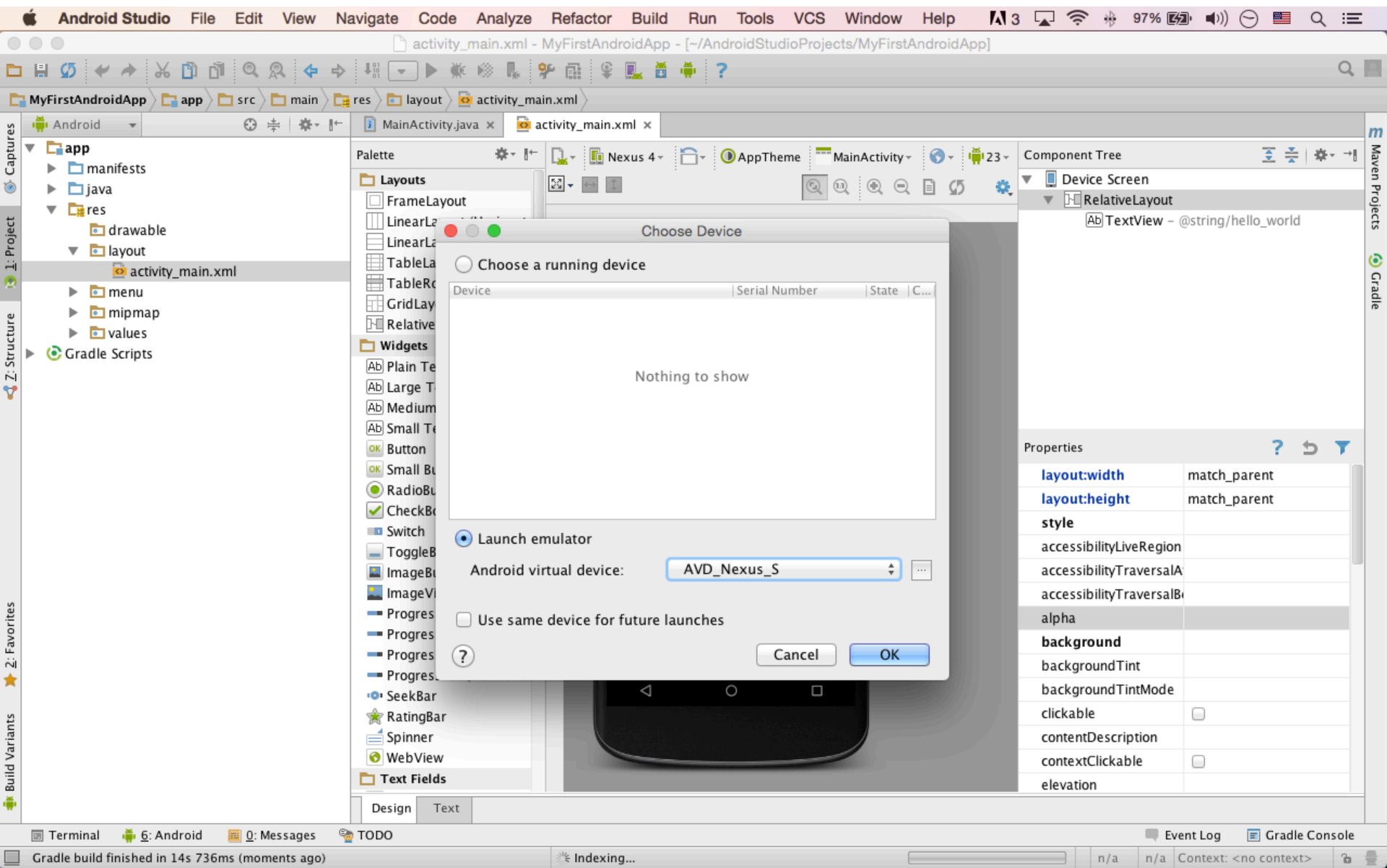
You can quickly get familiar with the main features of the IDE by reading these tips. You may try out the features described in the tips while this dialog stays open on the screen. If you close the dialog, you can always get back to it from the **Help | Tip of the Day** main menu item.

Show Tips on Startup

Properties

layout:width	match_parent
layout:height	match_parent
style	
accessibilityLiveRegion	
accessibilityTraversaIA	
accessibilityTraversaIB	
alpha	
background	
backgroundTint	
backgroundTintMode	
clickable	<input type="checkbox"/>
contentDescription	
contextClickable	<input type="checkbox"/>
elevation	





Component Tree

- Device Screen
 - RelativeLayout
 - TextView - @string/hello_world

Properties

layout:width	match_parent
layout:height	match_parent
style	
accessibilityLiveRegion	
accessibilityTraversaIA	
accessibilityTraversaIB	
alpha	
background	
backgroundTint	
backgroundTintMode	
clickable	<input type="checkbox"/>
contentDescription	
contextClickable	<input type="checkbox"/>
elevation	

Choose Device

Choose a running device

Device	Serial Number	State	C...
Nothing to show			

Launch emulator

Android virtual device: AVD_Nexus_S

Use same device for future launches

Cancel OK

Palette

Nexus 4

AppTheme MainActivity

Android 23

Layouts

- FrameLayout
- LinearLayout
- TableLayout
- TableRowView
- GridLayout
- RelativeLayout

Widgets

- Plain TextView
- Large Text
- Medium Text
- Small Text
- Button
- Small Button
- RadioButton
- CheckBox
- Switch
- ToggleButton
- ImageButton
- ImageView
- ProgressBar
- ProgressIndicator
- SeekBar
- RatingBar
- Spinner
- WebView

Text Fields

Design Text

MyFirstAndroidApp

- app
 - manifests
 - java
 - res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - mipmap
 - values
 - Gradle Scripts

1: Project

2: Favorites

Build Variants

Android Studio File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

activity_main.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirstAndroidApp]

MyFirstAndroidApp app src main res layout activity_main.xml

Android MainActivity.java activity_main.xml

app

- manifests
- java
- res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - mipmap
 - values
- Gradle Scripts

Palette

- Layouts
 - FrameLayout
 - LinearLayout (Horizontal)
 - LinearLayout (Vertical)
 - TableLayout
 - TableRow
 - GridLayout
 - RelativeLayout
- Widgets
 - Plain TextView
 - Large Text
 - Medium Text
 - Small Text
 - Button
 - Small Button
 - RadioButton
 - CheckBox
 - Switch
 - ToggleButton

Component Tree

- Device Screen
 - RelativeLayout
 - TextView - @string/hello_world

Properties

layout:width	match_parent
layout:height	match_parent
style	
accessibilityLiveRegion	
accessibilityTraversalAfter	
accessibilityTraversalBefore	
alpha	
background	

Run: app AVD: AVD_Nexus_5

```

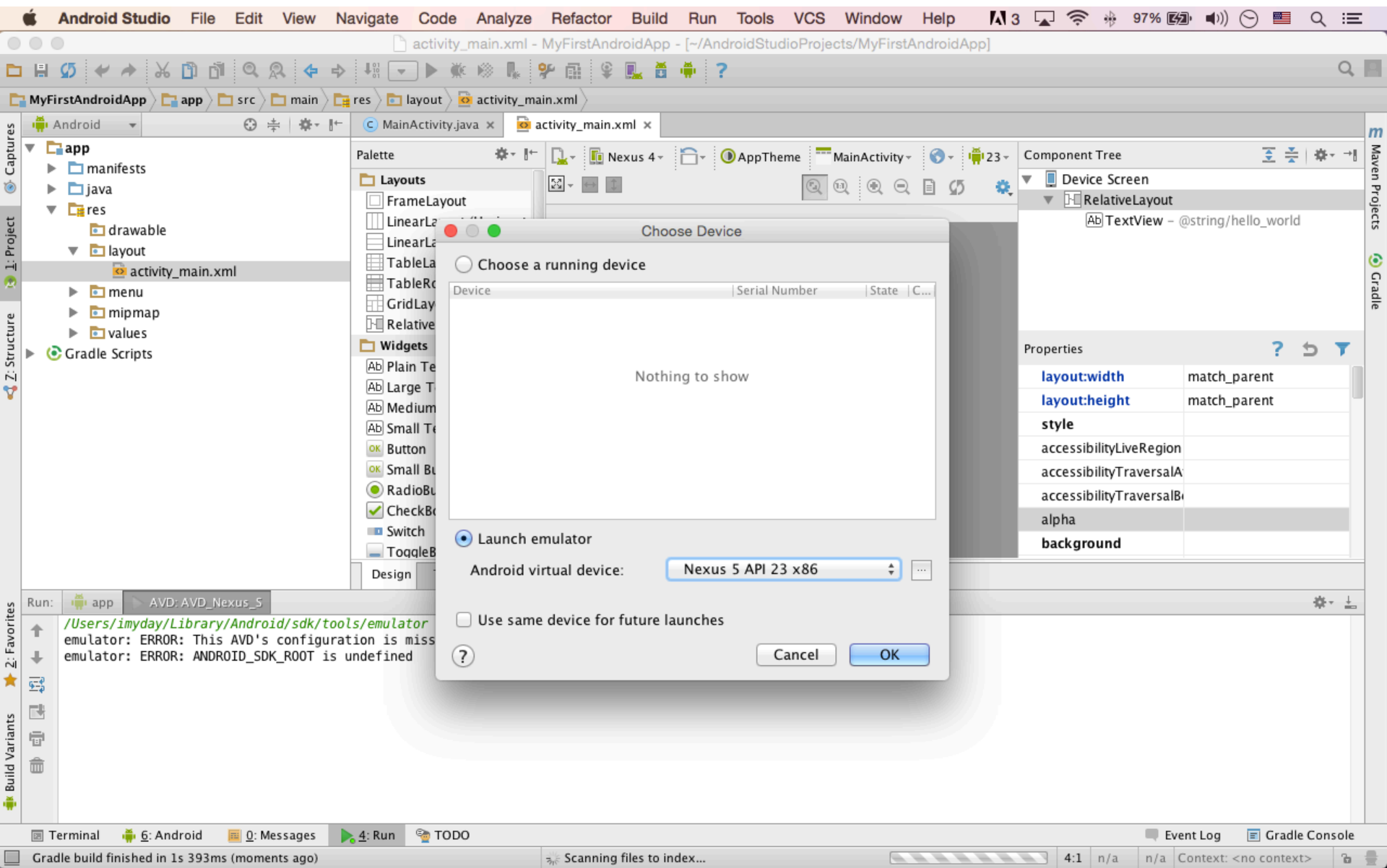
/Users/imyday/Library/Android/sdk/tools/emulator -avd AVD_Nexus_5 -netspeed full -netdelay none
emulator: ERROR: This AVD's configuration is missing a kernel file!!
emulator: ERROR: ANDROID_SDK_ROOT is undefined
  
```

Terminal Android Messages Run TODO

Event Log Gradle Console

Gradle build finished in 14s 736ms (a minute ago)

4:1 n/a n/a Context: <no context>



emulator64-x86 Window View

activity_main.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirstAndroidApp]

5554:Nexus_5_API_23_x86

MyFirstAndroidApp

- app
 - manifests
 - java
 - res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - mipmap
 - values
 - Gradle Scripts

Palette

- Layouts
 - FrameLayout
 - LinearLayout (Horizontal)
 - LinearLayout (Vertical)
 - TableLayout
 - TableRow
 - GridLayout
 - RelativeLayout
- Widgets
 - Plain TextView
 - Large Text
 - Medium Text
 - Small Text
 - Button
 - Small Button
 - RadioButton
 - CheckBox
 - Switch
 - ToogleButton


Design Text

Run: app AVD: Nexus_5_API_23_x86

```
/Users/imyday/Library/Android/sdk/tools/emulator -avd Nexus_5_API_23_x86 -netspeed full -netdelay none  
ERROR: couldn't get path to resize2fs binary  
Creating filesystem with parameters:  
  Size: 576716800  
  Block size: 4096  
  Blocks per group: 32768  
  Inodes per group: 7040  
  Inode size: 256  
  Journal blocks: 2200  
  Label:  
  Blocks: 140800  
  Block groups: 5  
  Reserved block group size: 39
```

Terminal Android Messages Run TODO

Gradle build finished in 1s 393ms (2 minutes ago)



emulator64-x86 Window View

activity_main.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFi

5554:Nexus_5_API_23_x86

MyFirstAndroidApp app src main res layout activity_main.xml

Android

- app
 - manifests
 - java
 - res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - mipmap
 - values
 - Gradle Scripts

Palette

- Layouts
 - FrameLayout
 - LinearLayout (Horizontal)
 - LinearLayout (Vertical)
 - TableLayout
 - TableRow
 - GridLayout
 - RelativeLayout
- Widgets
 - Plain TextView
 - Large Text
 - Medium Text
 - Small Text
 - Button
 - Small Button
 - RadioButton
 - CheckBox
 - Switch
 - ToqpleButton

Design Text

Run: app app AVD: Nexus_5_API_23_x86

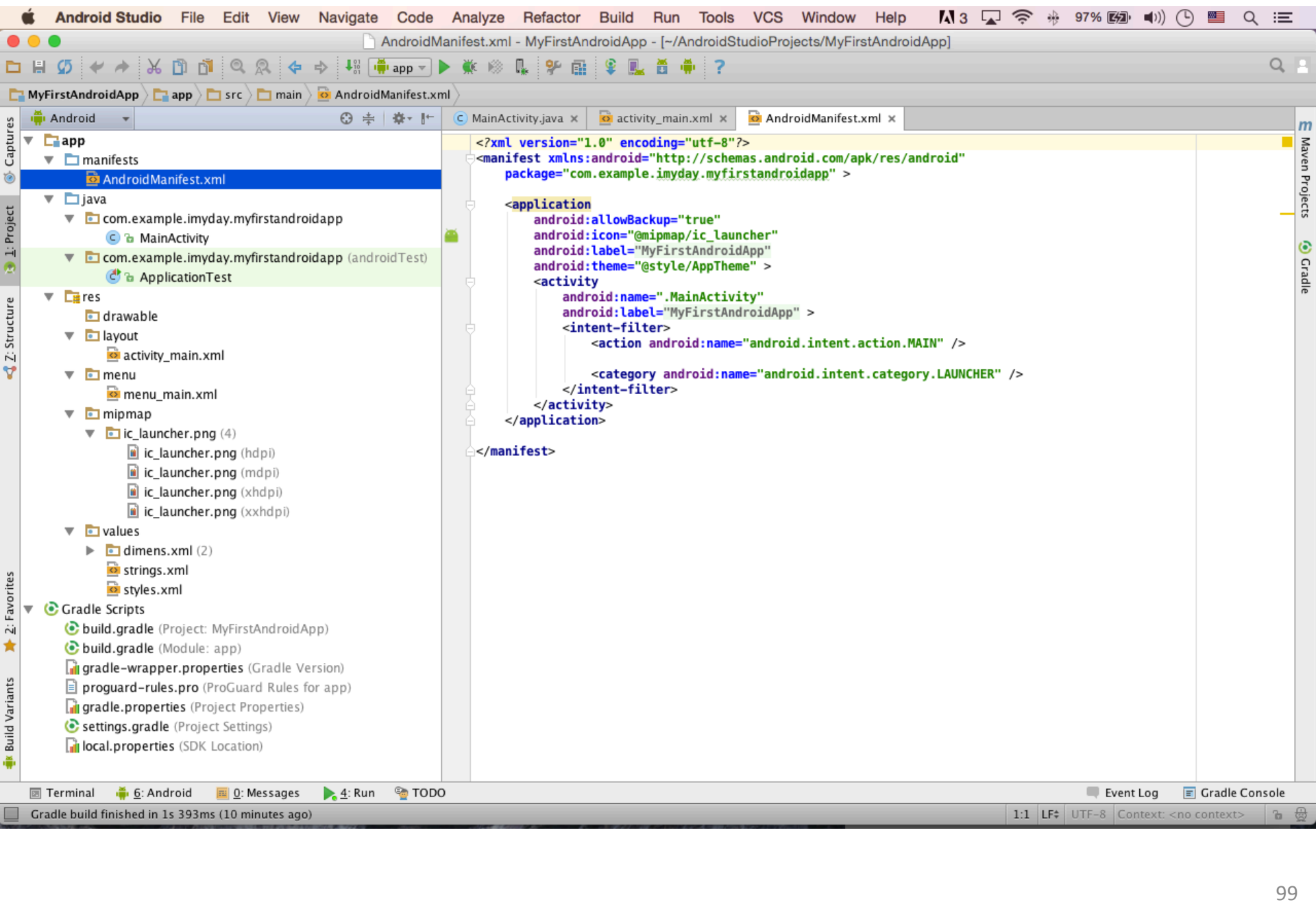
```

Blocks per group: 32768
Inodes per group: 4224
Inode size: 256
Journal blocks: 1024
Label:
Blocks: 16896
Block groups: 1
Reserved block group size: 7
Created filesystem with 11/4224 inodes and 1302/16896 blocks
HAXM is working and emulator runs in fast virt mode
emulator: emulator window was out of view and was recentered
emulator: UpdateCheck: current version '24.4.0', last version '24.4.0'
  
```

Terminal Android Messages Run TODO

Gradle build finished in 1s 393ms (4 minutes ago)





Android Studio File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MainActivity.java - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirstAndroidApp]

MyFirstAndroidApp app src main java com example imyday myfirstandroidapp MainActivity

Android MainActivity.java activity_main.xml AndroidManifest.xml

app

- manifests
 - AndroidManifest.xml
- java
 - com.example.imyday.myfirstandroidapp
 - MainActivity
 - com.example.imyday.myfirstandroidapp (androidTest)
 - ApplicationTest
- res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - menu_main.xml
 - mipmap
 - ic_launcher.png (4)
 - ic_launcher.png (hdpi)
 - ic_launcher.png (mdpi)
 - ic_launcher.png (xhdpi)
 - ic_launcher.png (xxhdpi)
 - values
 - dimens.xml (2)
 - strings.xml
 - styles.xml
- Gradle Scripts
 - build.gradle (Project: MyFirstAndroidApp)
 - build.gradle (Module: app)
 - gradle-wrapper.properties (Gradle Version)
 - proguard-rules.pro (ProGuard Rules for app)
 - gradle.properties (Project Properties)
 - settings.gradle (Project Settings)
 - local.properties (SDK Location)

```

package com.example.imyday.myfirstandroidapp;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();

        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }

        return super.onOptionsItemSelected(item);
    }
}

```

Terminal Android Messages Run TODO

Event Log Gradle Console

Gradle build finished in 1s 393ms (11 minutes ago)

8:14 LF UTF-8 Context: <no context>

Android Studio File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

activity_main.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirstAndroidApp]

MyFirstAndroidApp app src main res layout activity_main.xml

Android MainActivity.java menu_main.xml activity_main.xml AndroidManifest.xml

app

- manifests
 - AndroidManifest.xml
- java
 - com.example.imyday.myfirstandroidapp
 - MainActivity
 - ApplicationTest
- res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - menu_main.xml
 - mipmap
 - ic_launcher.png (4)
 - ic_launcher.png (hdpi)
 - ic_launcher.png (mdpi)
 - ic_launcher.png (xhdpi)
 - ic_launcher.png (xxhdpi)
 - values
 - dimens.xml (2)
 - strings.xml
 - styles.xml
- Gradle Scripts
 - build.gradle (Project: MyFirstAndroidApp)
 - build.gradle (Module: app)
 - gradle-wrapper.properties (Gradle Version)
 - proguard-rules.pro (ProGuard Rules for app)
 - gradle.properties (Project Properties)
 - settings.gradle (Project Settings)
 - local.properties (SDK Location)

Palette

- ImageView
- ProgressBar (Large)
- ProgressBar (Normal)
- ProgressBar (Small)
- SeekBar
- RatingBar
- Spinner
- WebView
- Text Fields
 - Plain Text
 - Person Name
 - Password
 - Password (Numeric)
 - E-mail
 - Phone
 - Postal Address
 - Multiline Text
 - Time
 - Date
 - Number
 - Number (Signed)
 - Number (Decimal)
- Containers
 - RadioGroup
 - ListView
 - GridView
 - ExpandableListView
 - ScrollView
 - HorizontalScrollView

Component Tree

- Device Screen
 - RelativeLayout
 - textView - @string/hello_world
 - editText

Properties

layout:width	wrap_content
layout:height	wrap_content
layout:margin	[]
layout:alignEnd	
layout:alignParentEnd	<input type="checkbox"/>
layout:alignParentStart	<input type="checkbox"/>
layout:alignStart	
layout:toEndOf	
layout:toStartOf	
layout:alignComponent	[]
layout:alignParent	[top]
layout:centerInParent	horizontal
style	
accessibilityLiveRegion	

Design Text

Terminal Android Messages Run TODO

Event Log Gradle Console

Gradle build finished in 1s 393ms (13 minutes ago)

n/a n/a Context: <no context>

Android Studio File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

activity_main.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirstAndroidApp]

MyFirstAndroidApp app src main res layout activity_main.xml

Android MainActivity.java menu_main.xml activity_main.xml AndroidManifest.xml

Preview Nexus 4 AppTheme

```

<RelativeLayout 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" android:paddingLeft="16dp"
    android:paddingRight="16dp"
    android:paddingTop="16dp"
    android:paddingBottom="16dp" tools:context=".MainActivity">

    <TextView android:text="Hello world!" android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/textView"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:layout_alignBaseline="@+id/textView"
        android:layout_alignBottom="@+id/textView"
        android:layout_centerHorizontal="true" />

</RelativeLayout>

```

app

- manifests
 - AndroidManifest.xml
- java
 - com.example.imyday.myfirstandro
 - MainActivity
 - ApplicationTest
- res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - menu_main.xml
 - mipmap
 - ic_launcher.png (4)
 - ic_launcher.png (hdpi)
 - ic_launcher.png (mdpi)
 - ic_launcher.png (xhdpi)
 - ic_launcher.png (xxhdpi)
 - values
 - dimens.xml (2)
 - strings.xml
 - styles.xml
- Gradle Scripts
 - build.gradle (Project: MyFirstAndroidA)
 - build.gradle (Module: app)
 - gradle-wrapper.properties (Gradle V)
 - proguard-rules.pro (ProGuard Rules)
 - gradle.properties (Project Properties)
 - settings.gradle (Project Settings)
 - local.properties (SDK Location)

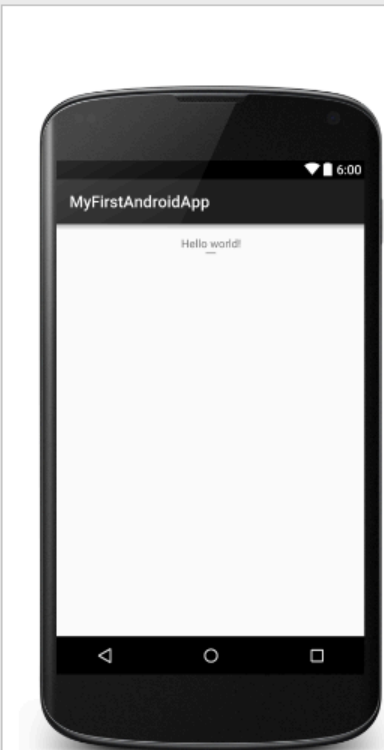
Design Text

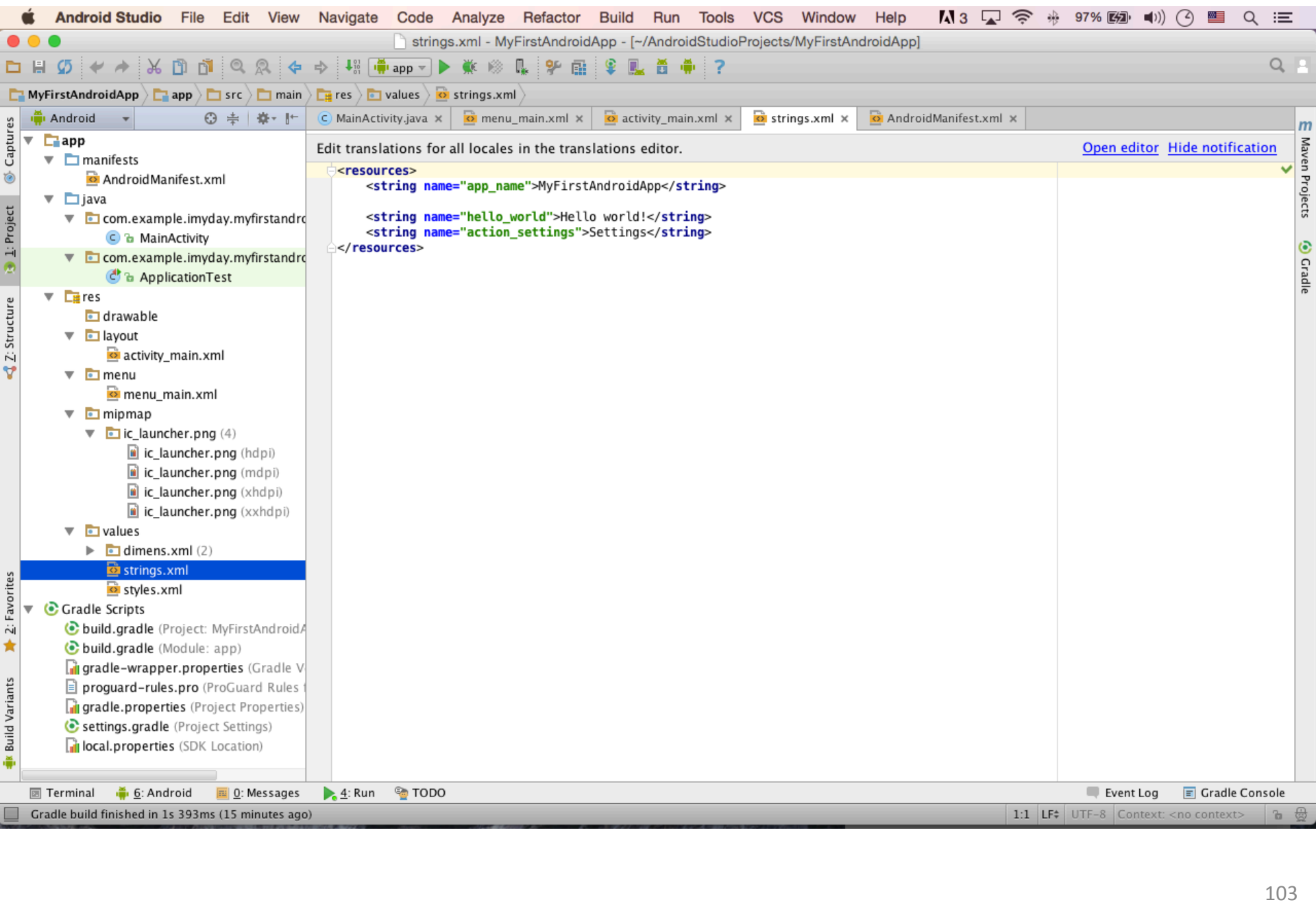
Terminal Android Messages Run TODO

Event Log Gradle Console

Gradle build finished in 1s 393ms (15 minutes ago)

1:1 LF UTF-8 Context: <no context>

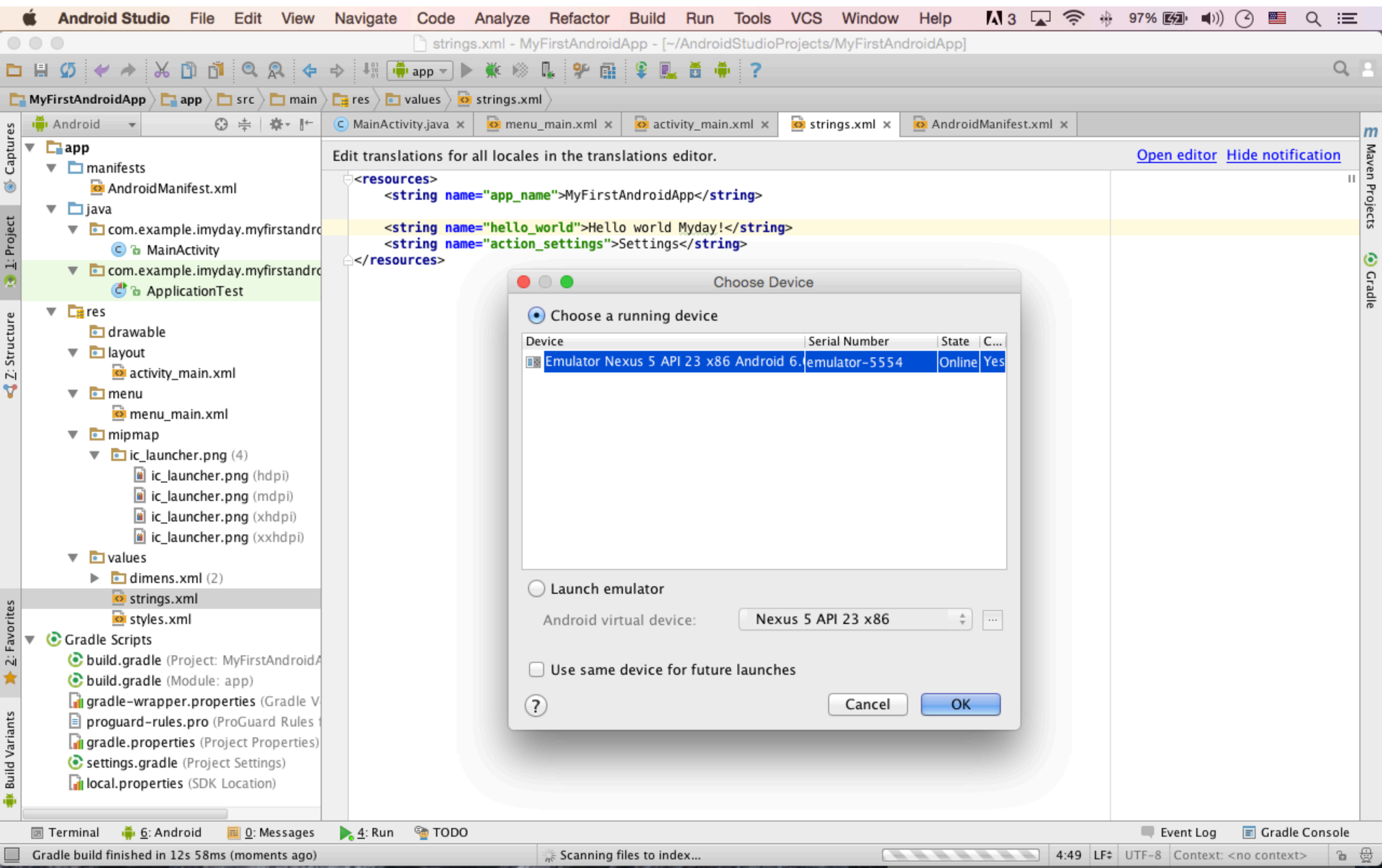




- app
 - manifests
 - AndroidManifest.xml
 - java
 - com.example.imyday.myfirststandro
 - MainActivity
 - com.example.imyday.myfirststandro
 - ApplicationTest
 - res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - menu_main.xml
 - mipmap
 - ic_launcher.png (4)
 - ic_launcher.png (hdpi)
 - ic_launcher.png (mdpi)
 - ic_launcher.png (xhdpi)
 - ic_launcher.png (xxhdpi)
 - values
 - dimens.xml (2)
 - strings.xml
 - styles.xml
 - Gradle Scripts
 - build.gradle (Project: MyFirstAndroidA)
 - build.gradle (Module: app)
 - gradle-wrapper.properties (Gradle V)
 - proguard-rules.pro (ProGuard Rules t)
 - gradle.properties (Project Properties)
 - settings.gradle (Project Settings)
 - local.properties (SDK Location)

Edit translations for all locales in the translations editor. [Open editor](#) [Hide notification](#)

```
<resources>  
  <string name="app_name">MyFirstAndroidApp</string>  
  <string name="hello_world">Hello world Myday!</string>  
  <string name="action_settings">Settings</string>  
</resources>
```

emulator64-x86 Window View

strings.xml - MyFirstAndroidApp - [~/AndroidStudioProjects/MyFirst/]

MyFirstAndroidApp app src main res values strings.xml

MainActivity.java x menu_main.xml x activity_main.xml x strings.xml x

Android

app

- manifests
 - AndroidManifest.xml
- java
 - com.example.imyday.myfirstand
 - MainActivity
 - ApplicationTest
- res
 - drawable
 - layout
 - activity_main.xml
 - menu
 - menu_main.xml
 - mipmap
 - ic_launcher.png (4)
 - ic_launcher.png (hdpi)
 - ic_launcher.png (mdpi)
 - ic_launcher.png (xhdpi)
 - ic_launcher.png (xxhdpi)
 - values

Edit translations for all locales in the translations editor.

```

<resources>
  <string name="app_name">MyFirstAndroidApp</string>
  <string name="hello_world">Hello world Myday!</string>
  <string name="action_settings">Settings</string>
</resources>

```

Emulator Nexus_5_API_23_x86 Android 6.0 (API 23) com.example.imyday.myfirstandroidapp (7964)

logcat ADB logs Memory CPU

Log level: Verbose

```

09-30 15:07:07.162 7964-7964/com.example.imyday.myfirstandroidapp W/System: ClassLoader referenced un
09-30 15:07:07.254 7964-7978/com.example.imyday.myfirstandroidapp D/OpenGLESRenderer: Use EGL_SWAP_BEHA
09-30 15:07:07.291 7964-7964/com.example.imyday.myfirstandroidapp D/: HostConnection::get() New Host
09-30 15:07:07.349 7964-7978/com.example.imyday.myfirstandroidapp D/: HostConnection::get() New Host
09-30 15:07:07.359 7964-7978/com.example.imyday.myfirstandroidapp I/OpenGLESRenderer: Initialized EGL
09-30 15:07:07.416 7964-7978/com.example.imyday.myfirstandroidapp W/EGL_emulation: eglSurfaceAttrib n
09-30 15:07:07.417 7964-7978/com.example.imyday.myfirstandroidapp W/OpenGLESRenderer: Failed to set EGL

```

Terminal 6: Android 0: Messages 4: Run TODO

Gradle build finished in 12s 58ms (a minute ago)

5554:Nexus_5_API_23_x86

MyFirstAndroidApp

3:07

Hello world Myday!

q w e r t y u i o p

a s d f g h j k l

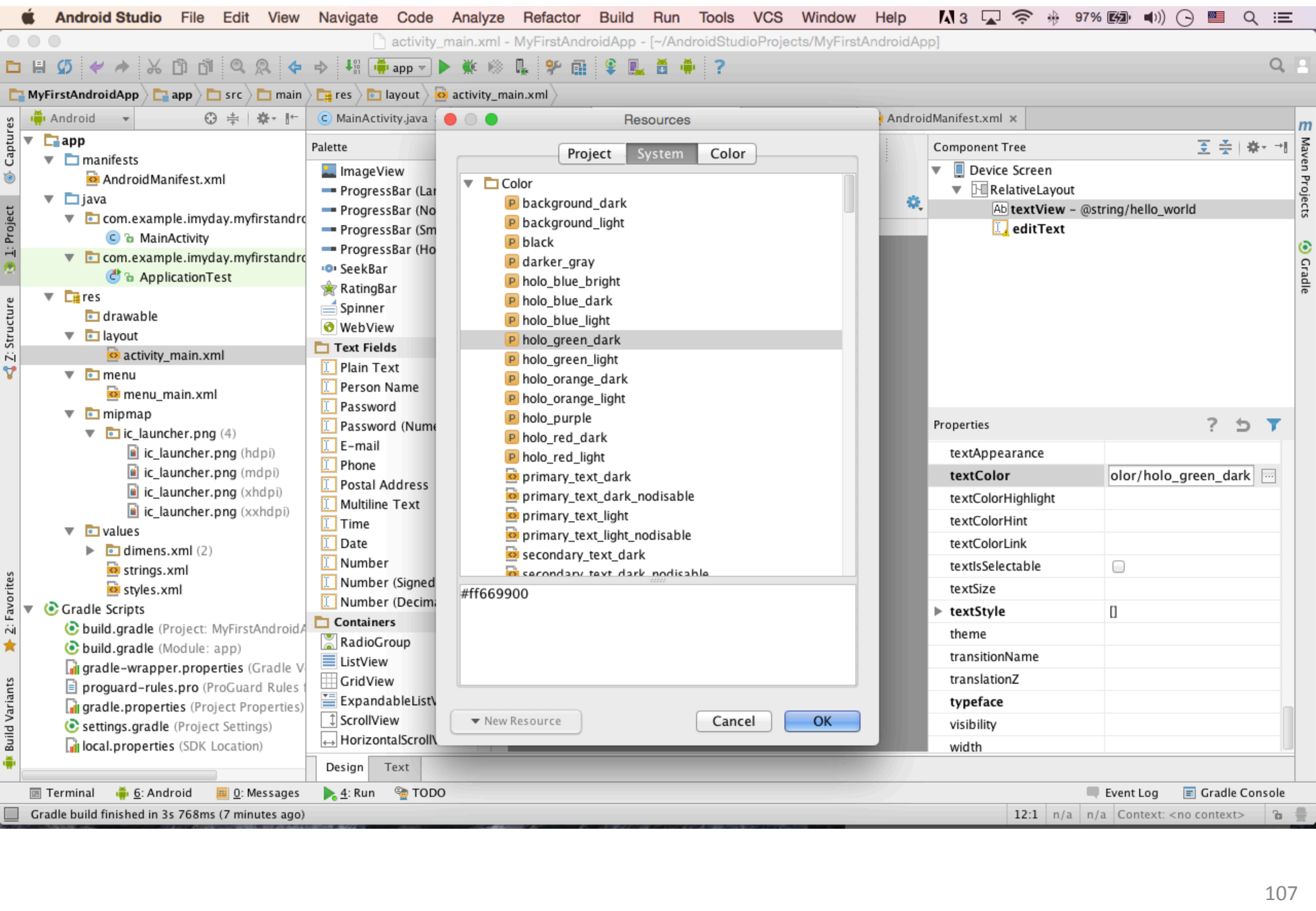
z x c v b n m

?123 , .

▽ ○ □

Maven Projects

Gradle



Project System Color

- Color
 - background_dark
 - background_light
 - black
 - darker_gray
 - holo_blue_bright
 - holo_blue_dark
 - holo_blue_light
 - holo_green_dark
 - holo_green_light
 - holo_orange_dark
 - holo_orange_light
 - holo_purple
 - holo_red_dark
 - holo_red_light
 - primary_text_dark
 - primary_text_dark_nodisable
 - primary_text_light
 - primary_text_light_nodisable
 - secondary_text_dark
 - secondary_text_dark_nodisable

#ff669900

New Resource Cancel OK

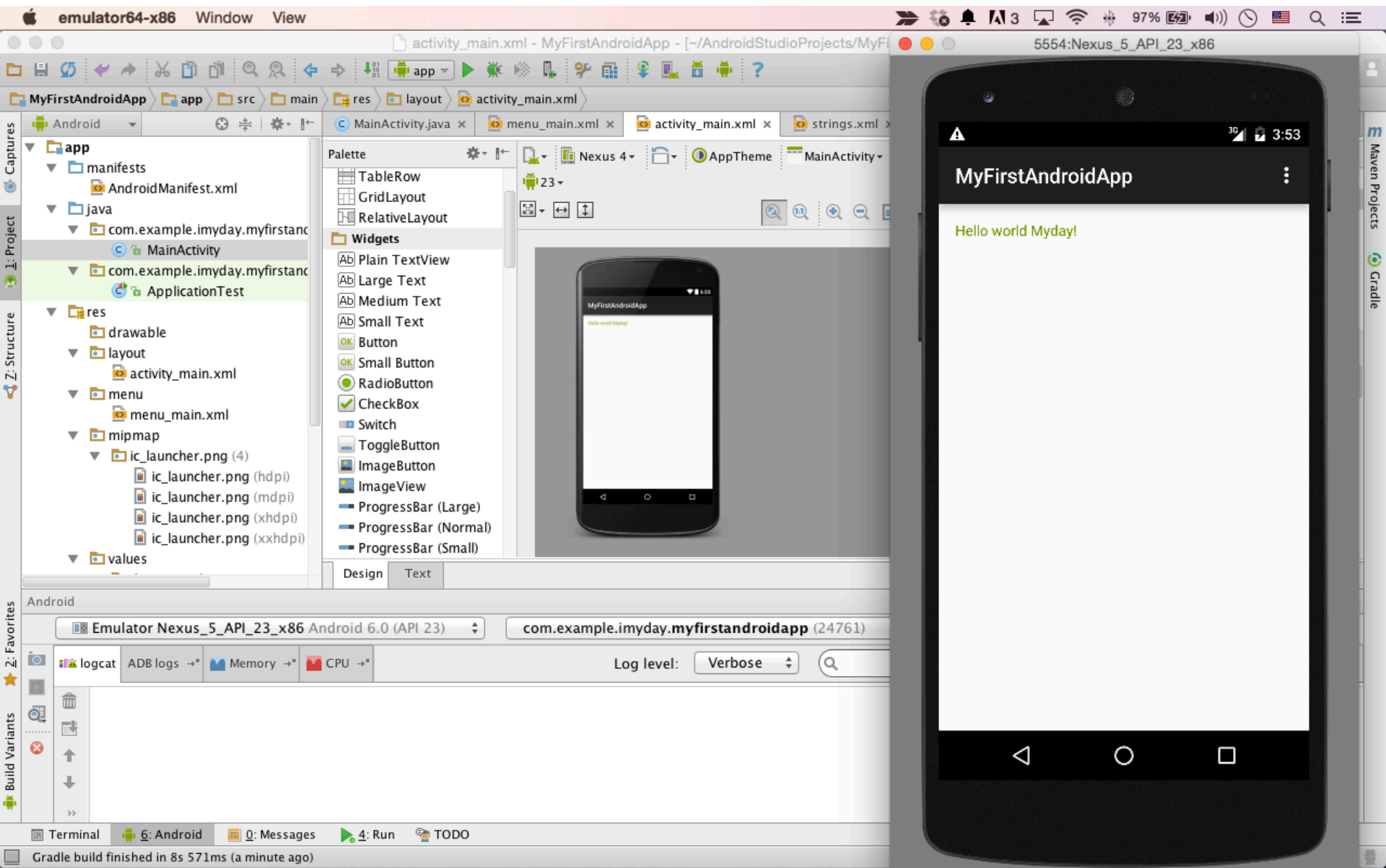
Component Tree

- Device Screen
 - RelativeLayout
 - textView - @string/hello_world
 - editText

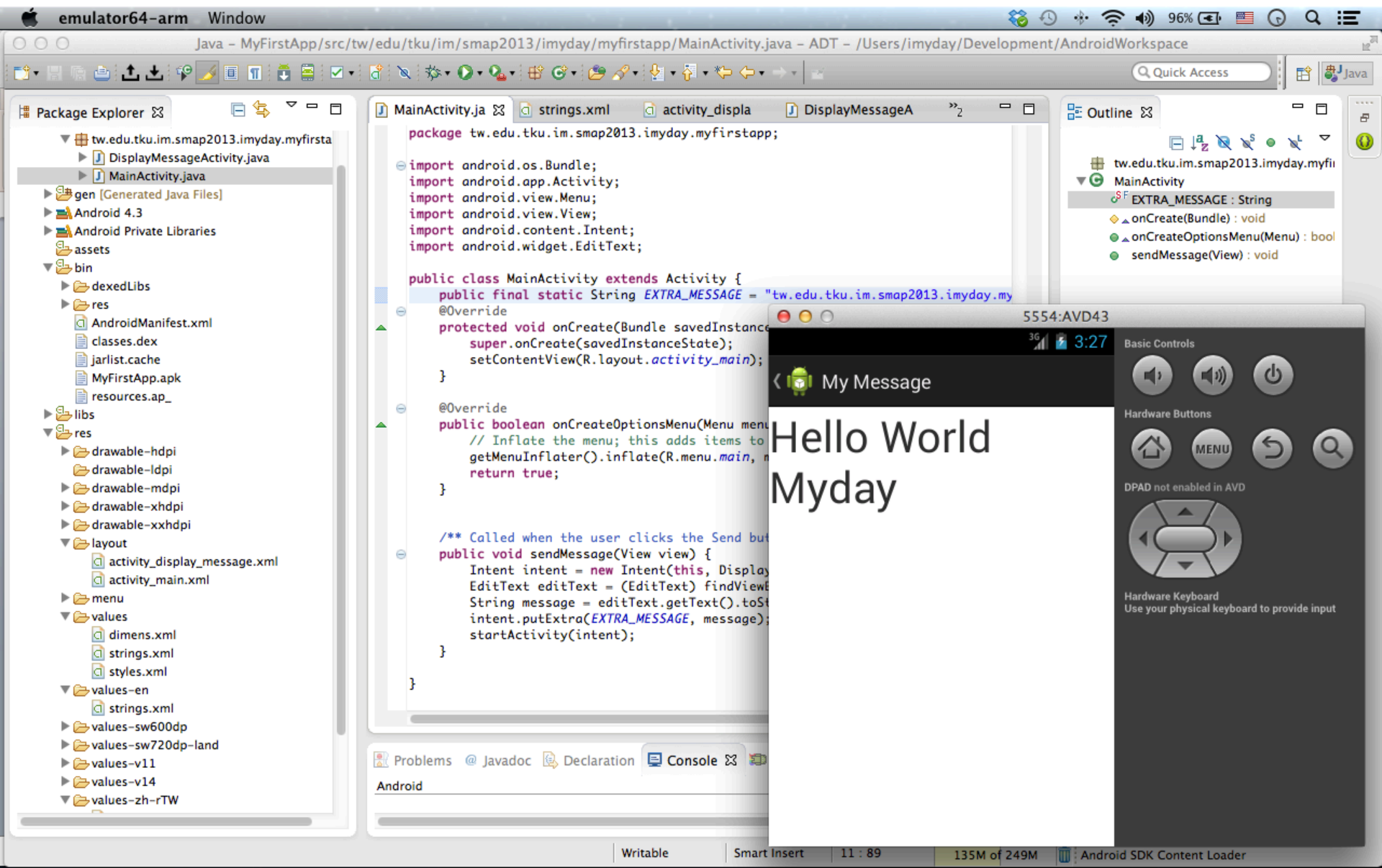
Properties

textAppearance	
textColor	color/holo_green_dark
textColorHighlight	
textColorHint	
textColorLink	
textsSelectable	<input type="checkbox"/>
textSize	
textStyle	
theme	
transitionName	
translationZ	
typeface	
visibility	
width	

My First Android App



Demo:
Building Your First Android App
with
Android Developer Tools
(ADT)



```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.content.Intent;
import android.widget.EditText;

public class MainActivity extends Activity {
    public final static String EXTRA_MESSAGE = "tw.edu.tku.im.smap2013.imyday.my";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the menu.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }

    /** Called when the user clicks the Send button */
    public void sendMessage(View view) {
        Intent intent = new Intent(this, DisplayMessageActivity.class);
        EditText editText = (EditText) findViewById(R.id.edit_message_text);
        String message = editText.getText().toString();
        intent.putExtra(EXTRA_MESSAGE, message);
        startActivity(intent);
    }
}
```

5554:AVD43

3G 3:27

My Message

Hello World Myday

Basic Controls

Hardware Buttons

DPAD not enabled in AVD

Hardware Keyboard
Use your physical keyboard to provide input

- Getting Started ^
- Building Your First App** ^
- Creating an Android Project
- Running Your Application
- Building a Simple User Interface
- Starting Another Activity
- Adding the Action Bar v
- Supporting Different Devices v
- Managing the Activity Lifecycle v
- Building a Dynamic UI with Fragments v
- Saving Data v
- Interacting with Other Apps v
- Building Apps with Content Sharing v
- Building Apps with Multimedia v
- Building Apps with Graphics & Animation v

Building Your First App

Welcome to Android application development!

This class teaches you how to build your first Android app. You'll learn how to create an Android project and run a debuggable version of the app. You'll also learn some fundamentals of Android app design, including how to build a simple user interface and handle user input.

Before you start this class, be sure you have your development environment set up. You need to:

1. Download the Android SDK.
2. Install the ADT plugin for Eclipse (if you'll use the Eclipse IDE).
3. Download the latest SDK tools and platforms using the SDK Manager.

If you haven't already done these tasks, start by downloading the [Android SDK](#) and following the install steps. Once you've finished the setup, you're ready to begin this class.

This class uses a tutorial format that incrementally builds a small Android app that teaches you some fundamental concepts about Android development, so it's important that you follow each step.

[Start the first lesson](#)



[GET STARTED](#) >

DEPENDENCIES AND PREREQUISITES

- [Android SDK](#)
- [ADT Plugin 20.0.0](#) or higher (if you're using Eclipse)

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eclipse

- FAVORITES**
- Dropbox
 - All My Files
 - AirDrop
 - Applications
 - Desktop
 - Documents
 - Downloads
 - Movies
 - Music
 - Pictures
 - imyday
- DEVICES**
- iMyday的Mac...
 - Macintosh HD

- Applications
- bin
- Desktop
- Development
- Documents
- Downloads
- Dropbox
- jEdit
- man
- Movies
- Music
- my-app
- Pictures
- Public
- tmp
- VirtualBox VMs

- adt-bundl...-20130917
 - eclipse
 - sdk
- AndroidWorkspace
- artifacts.xml
- configuration
- dropins
- Eclipse.app



Name	Eclipse.app
Kind	Application
Size	526 KB
Created	2013年9月18日 上午09:21
Modified	今天 上午09:09
Last opened	今天 上午09:09
Version	3.8

Macintosh HD > Users > imyday > Development > adt-bundle-mac-x86_64-20130917 > eclipse > Eclipse.app

- Getting Started ^
- Building Your First App ^
 - [Creating an Android Project](#)
 - Running Your Application
 - Building a Simple User Interface
 - Starting Another Activity
- Adding the Action Bar v
- Supporting Different Devices v
- Managing the Activity Lifecycle v
- Building a Dynamic UI with Fragments v
- Saving Data v
- Interacting with Other Apps v
- Building Apps with Content Sharing v
- Building Apps with Multimedia v
- Building Apps with Graphics & Animation v

Creating an Android Project

An Android project contains all the files that comprise the source code for your Android app. The Android SDK tools make it easy to start a new Android project with a set of default project directories and files.

This lesson shows how to create a new project either using Eclipse (with the ADT plugin) or using the SDK tools from a command line.

Note: You should already have the Android SDK installed, and if you're using Eclipse, you should also have the [ADT plugin](#) installed (version 21.0.0 or higher). If you don't have these, follow the guide to [Installing the Android SDK](#) before you start this lesson.

< PREVIOUS NEXT >


THIS LESSON TEACHES YOU TO

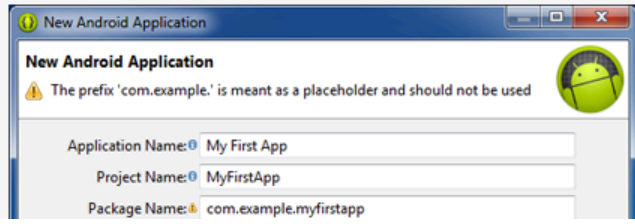
- [Create a Project with Eclipse](#)
- [Create a Project with Command Line Tools](#)

YOU SHOULD ALSO READ

- [Installing the SDK](#)
- [Managing Projects](#)

Create a Project with Eclipse

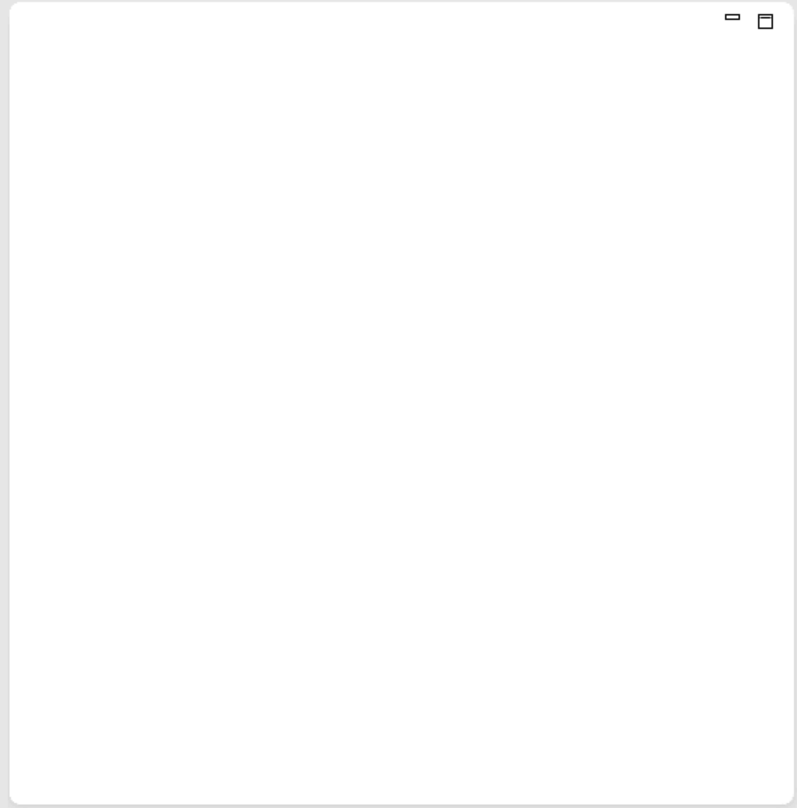
- Click **New**  in the toolbar.
- In the window that appears, open the **Android** folder, select **Android Application Project**, and click **Next**.
- Fill in the form that appears:
 - Application Name** is the app name that appears to users. For this project, use "My First App."
 - Project Name** is the name of your project directory and the name visible in Eclipse.



Package Explorer



Package Explorer



Outline

An outline is not available.

Android IDE

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

[New Android Application...](#)

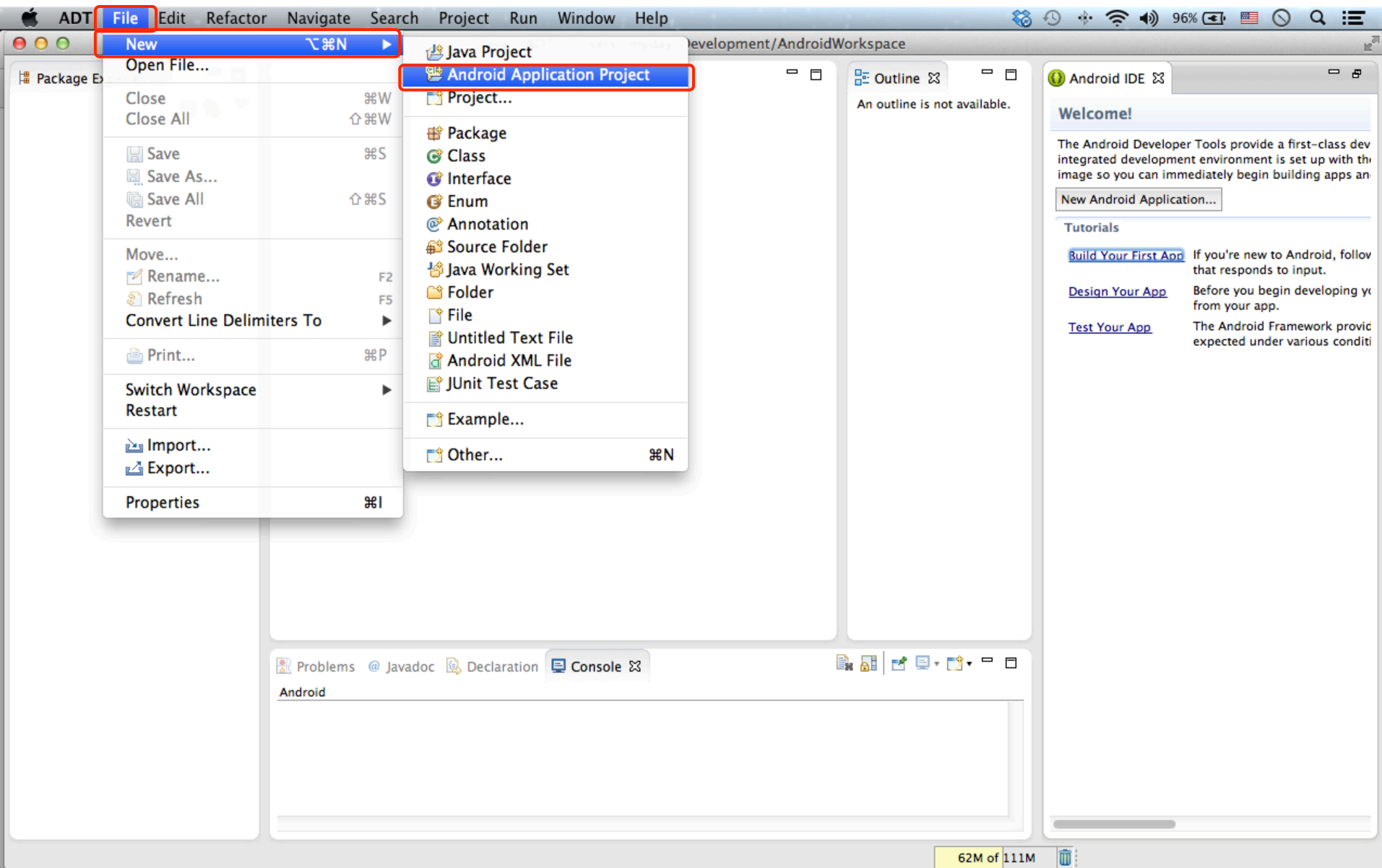
Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your app.
- [Test Your App](#) The Android Framework provides expected under various conditions.

Problems @ Javadoc Declaration Console


Android





Package Explorer

New Android Application

 The prefix 'com.example.' is meant as a placeholder and should not be used

Application Name:

Project Name:


Package Name:

Minimum Required SDK:

Target SDK:

Compile With:

Theme:

 The application name is shown in the Play Store, as well as in the Manage Application list in Settings.

Android IDE

Welcome!

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[New Android Application...](#)

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your from your app.
- [Test Your App](#) The Android Framework provides expected under various conditions.

Problems @ Javadoc Declaration Console

Android

Package Explorer

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.

Android IDE

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[New Android Application...](#)

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- [Build Your First App](#) If you're new to Android, follow that responds to input.
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- [Test Your App](#) The Android Framework provides expected under various conditions.

Problems @ Javadoc Declaration Console

Android

Package Explorer

New Android Application

Creates a new Android Application

Application Name:

Project Name:


Package Name:

Minimum Required SDK:

Target SDK:

Compile With:

Theme: Holo Light with Dark Action Bar

 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.

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- [Test Your App](#) The Android Framework provides expected under various conditions.

Problems @ Javadoc Declaration Console

Android

Package Explorer

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:

Android IDE

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your from your app.
- [Test Your App](#) The Android Framework provides expected under various conditions

Problems @ Javadoc Declaration Console

Android

Package Explorer

Configure Launcher Icon

Configure the attributes of the icon set

Foreground: **Image** Clipart Text

Image File:

Trim Surrounding Blank Space


Additional Padding: 0%


Foreground Scaling: **Crop** Center


Shape **None** Square Circle


Background Color:

Preview:

mdpi: 

hdpi: 

xhdpi: 

xxhdpi: 

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your from your app.
- [Test Your App](#) The Android Framework provides expected under various conditions

Problems javadoc Declaration Console

Android


Package Explorer

New Android Application

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

Create Activity

- Blank Activity
- Fullscreen Activity
- Master/Detail Flow



Blank Activity
Creates a new blank activity, with an action bar and optional navigational elements such as tabs or horizontal swipe.

? < Back Next > Cancel Finish

Android IDE

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

New Android Application...

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your from your app.
- [Test Your App](#) The Android Framework provides expected under various conditions

Problems javadoc Declaration Console

Android

Package Explorer


New Android Application


Blank Activity
Creates a new blank activity, with an action bar and optional navigational elements such as tabs or horizontal swipe.

Activity Name

Layout Name

Navigation Type



 The name of the activity class to create

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

[New Android Application...](#)

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your from your app.
- [Test Your App](#) The Android Framework provides expected under various conditions

Problems | Javadoc | Declaration | Console

Android

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java
```

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }

}
```

Outline

- tw.edu.tku.im.smap2013.imyday
 - MainActivity
 - onCreate(Bundle)
 - onCreateOptionsMenu

Android IDE

Welcome!

The Android Developer Tools provide a first-class dev integrated development environment is set up with the image so you can immediately begin building apps and

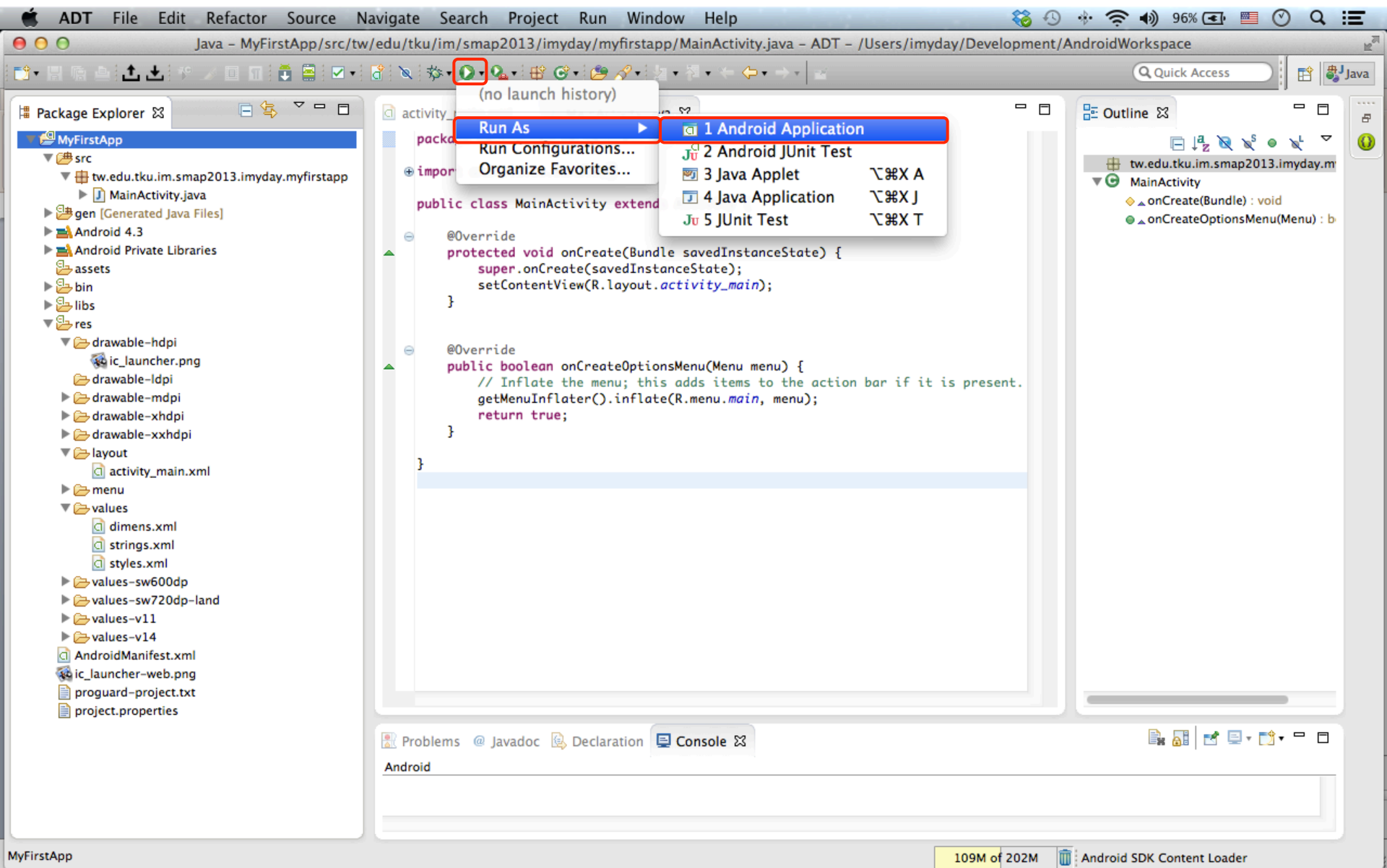
[New Android Application...](#)

Tutorials

- [Build Your First App](#) If you're new to Android, follow that responds to input.
- [Design Your App](#) Before you begin developing your app.
- [Test Your App](#) The Android Framework provides expected under various conditions.

Problems @ Javadoc Declaration Console

Android



Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
 - ic_launcher.png
 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
 - drawable-xxhdpi
 - layout
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

```
activity_main.xml | MainActivity.java
```

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

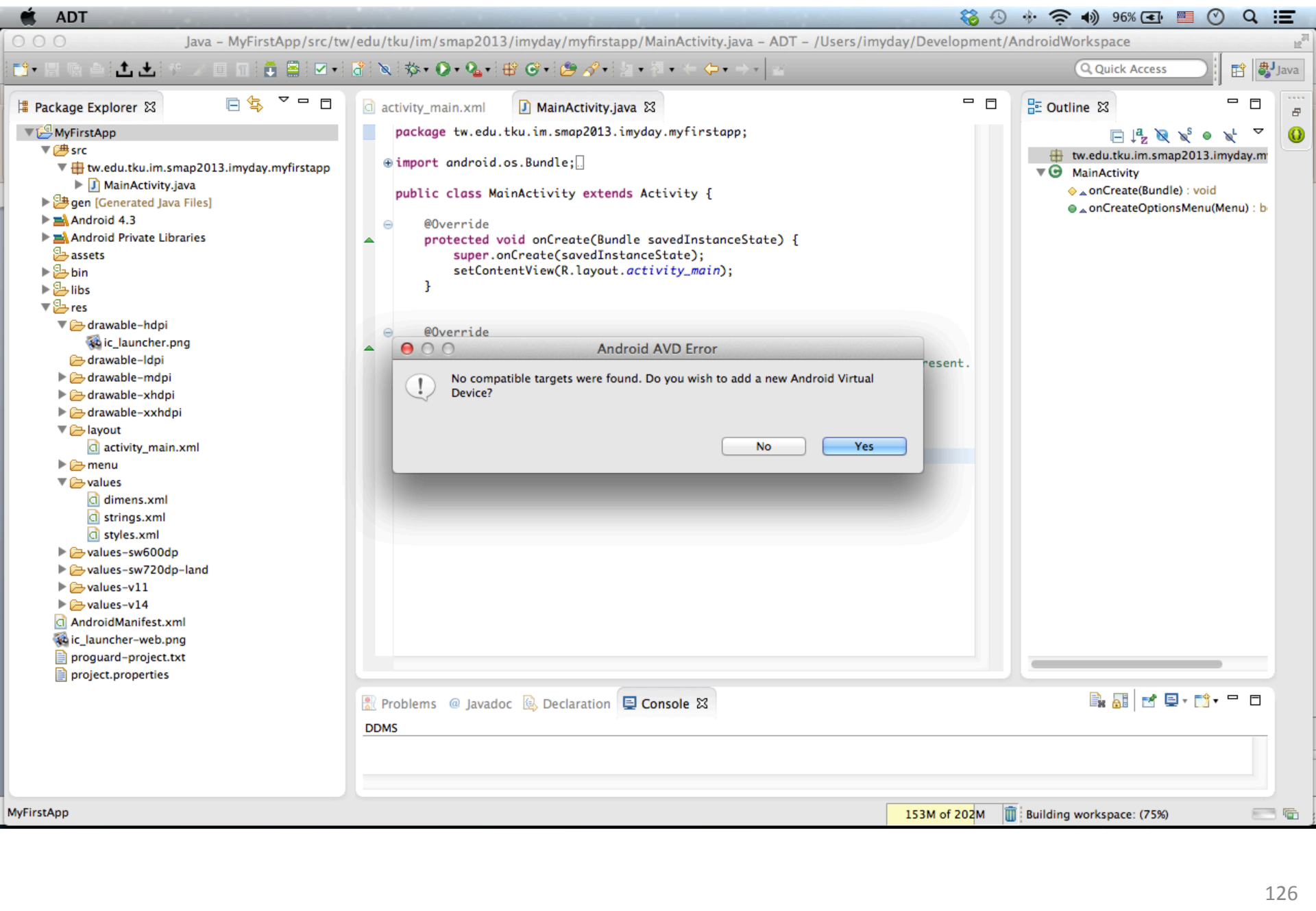
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

Problems | Javadoc | Declaration | Console

DDMS



Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
 - ic_launcher.png
 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
 - drawable-xxhdpi
 - layout
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java
```

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    // ...
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

Problems @ Javadoc Declaration Console

DDMS

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
 - ic_launcher.png
 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
 - drawable-xxhdpi
 - layout
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

activity_main.xml MainActivity.java

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;
```

Android Device Chooser

Select a device with min API level 8.

Choose a running Android device

Serial Number	AVD Name	Target	Debug	State

Launch a new Android Virtual Device

AVD Name	Target Name	Platform	API Level	CPU/ABI	Details...
--	No AVD available	--	--		Start... Refresh Manager...

Use same device for future launches

Cancel OK

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

Android

```
[2013-10-14 11:06:23 - MyFirstApp] Performing tw.edu.tku.im.smap2013.imyday.myfirstapp.MainActivity activity launch
```

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
 - ic_launcher.png
 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
 - drawable-xxhdpi
 - layout
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

activity_main.xml MainActivity.java

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;
```

Android Device Chooser

Select a device with min API level 8.

Choose a running Android device

Serial Number	AVD Name	Target	Debug	State

Launch a new Android Virtual Device

AVD Name	Target Name	Platform	API Level	CPU/ABI	Details...
--	No AVD available	--	--		Start...

Use same device for future launches

Cancel OK Refresh

Refresh

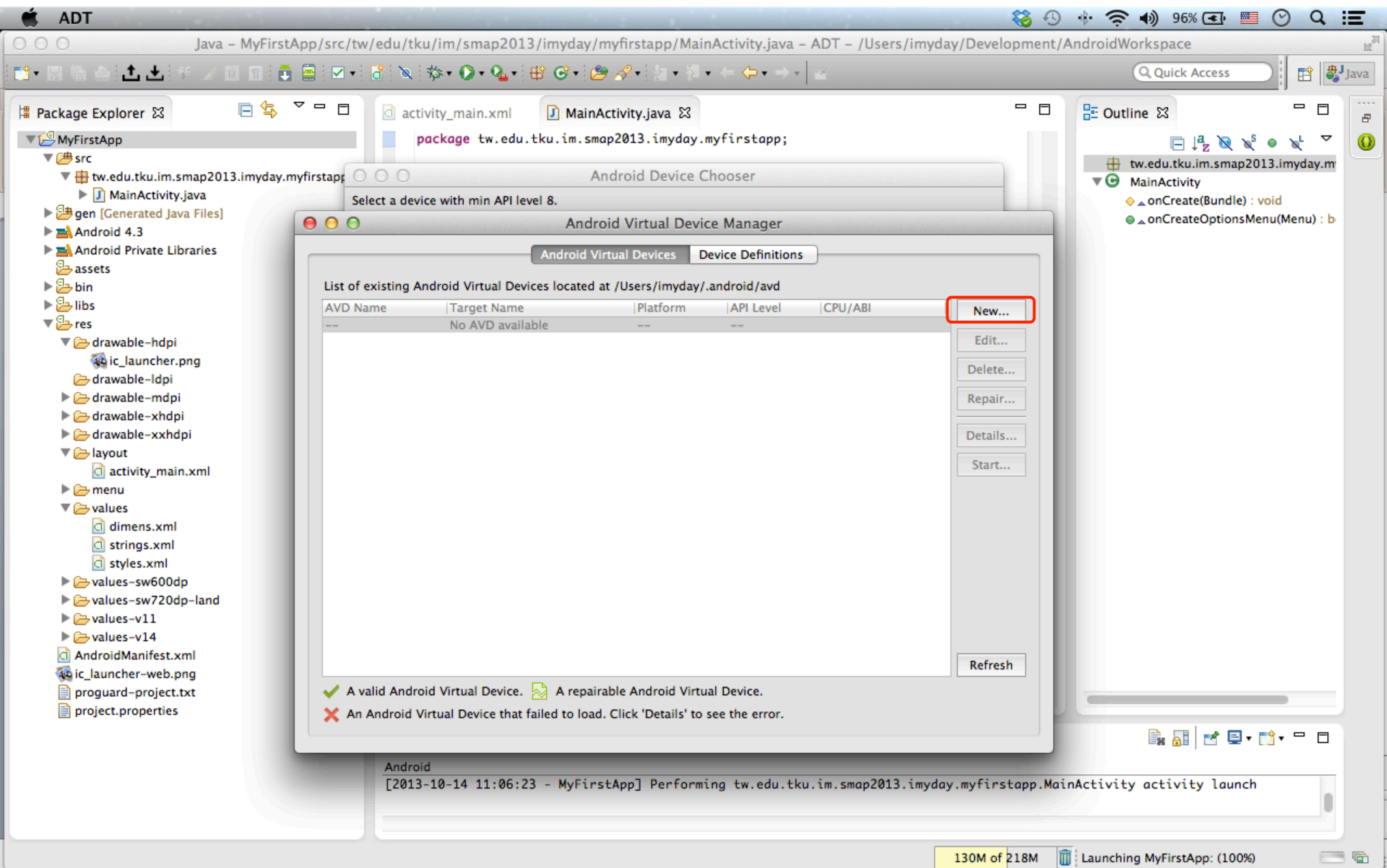
- ✓ A valid Android Virtual Device.
- ✗ An Android Virtual Device that failed to load. Click 'Details' to see the error.

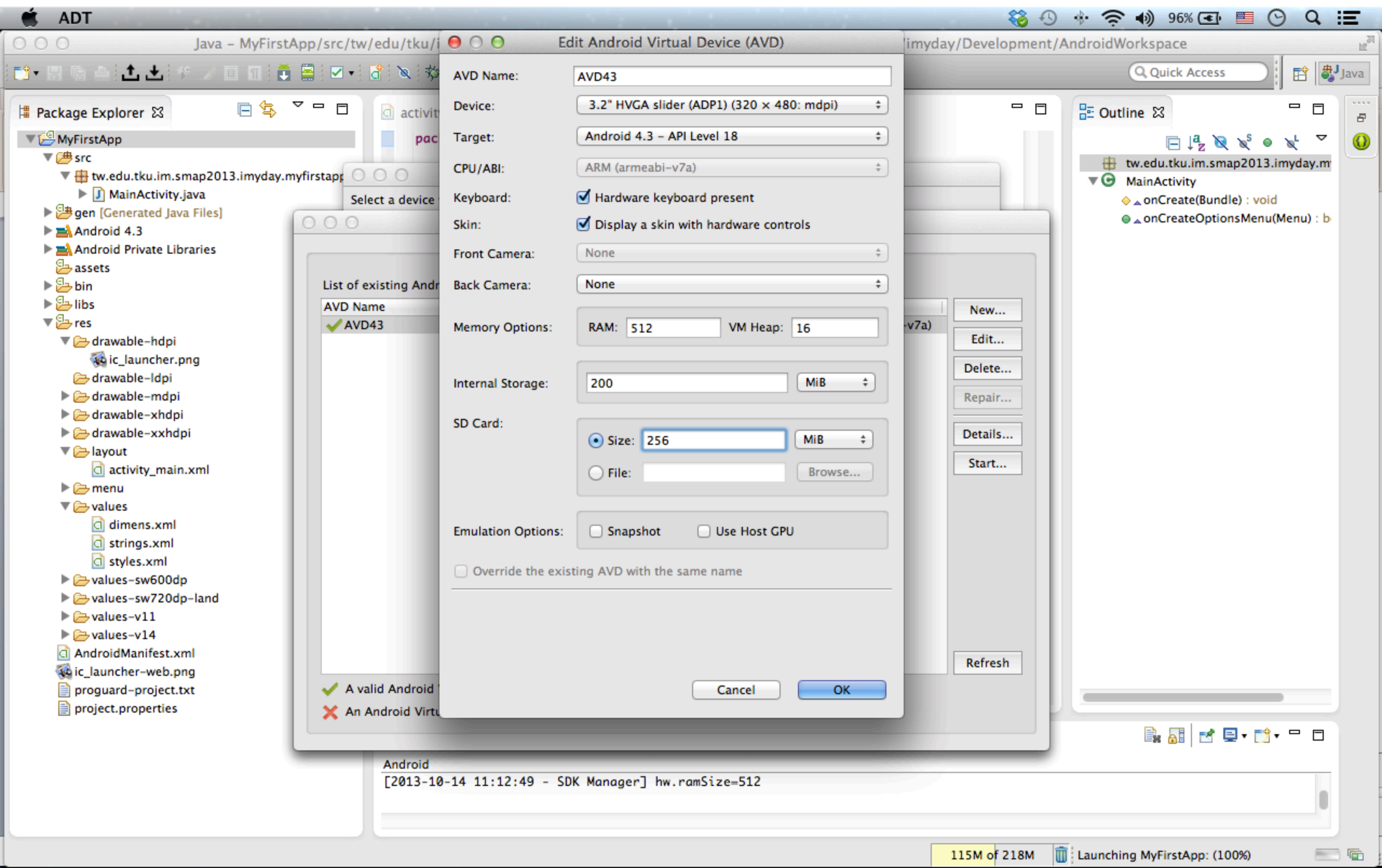
Android
[2013-10-14 11:06:23 - MyFirstApp] Performing tw.edu.tku.im.smap2013.imyday.myfirstapp.MainActivity activity launch

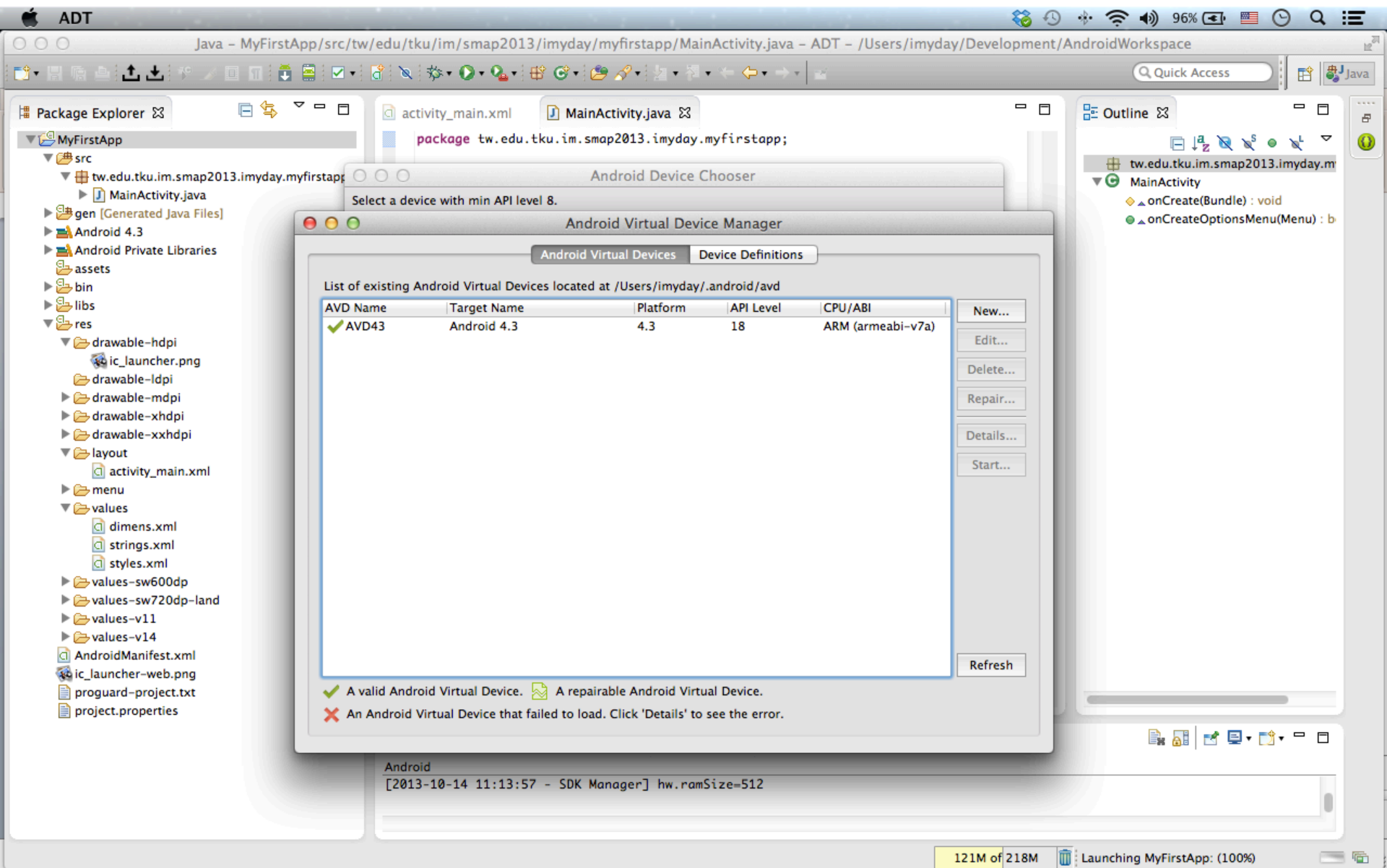
Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

116M of 218M Launching MyFirstApp: (100%)







Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
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 - drawable-xxhdpi
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 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

activity_main.xml MainActivity.java

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;
```

Android Device Chooser

Select a device with min API level 8.

Choose a running Android device

Serial Number	AVD Name	Target	Debug	State

Launch a new Android Virtual Device

AVD Name	Target Name	Platform	API Level	CPU/ABI	Details...
AVD43	Android 4.3	4.3	18	ARM (armeabi...	Start...

Use same device for future launches

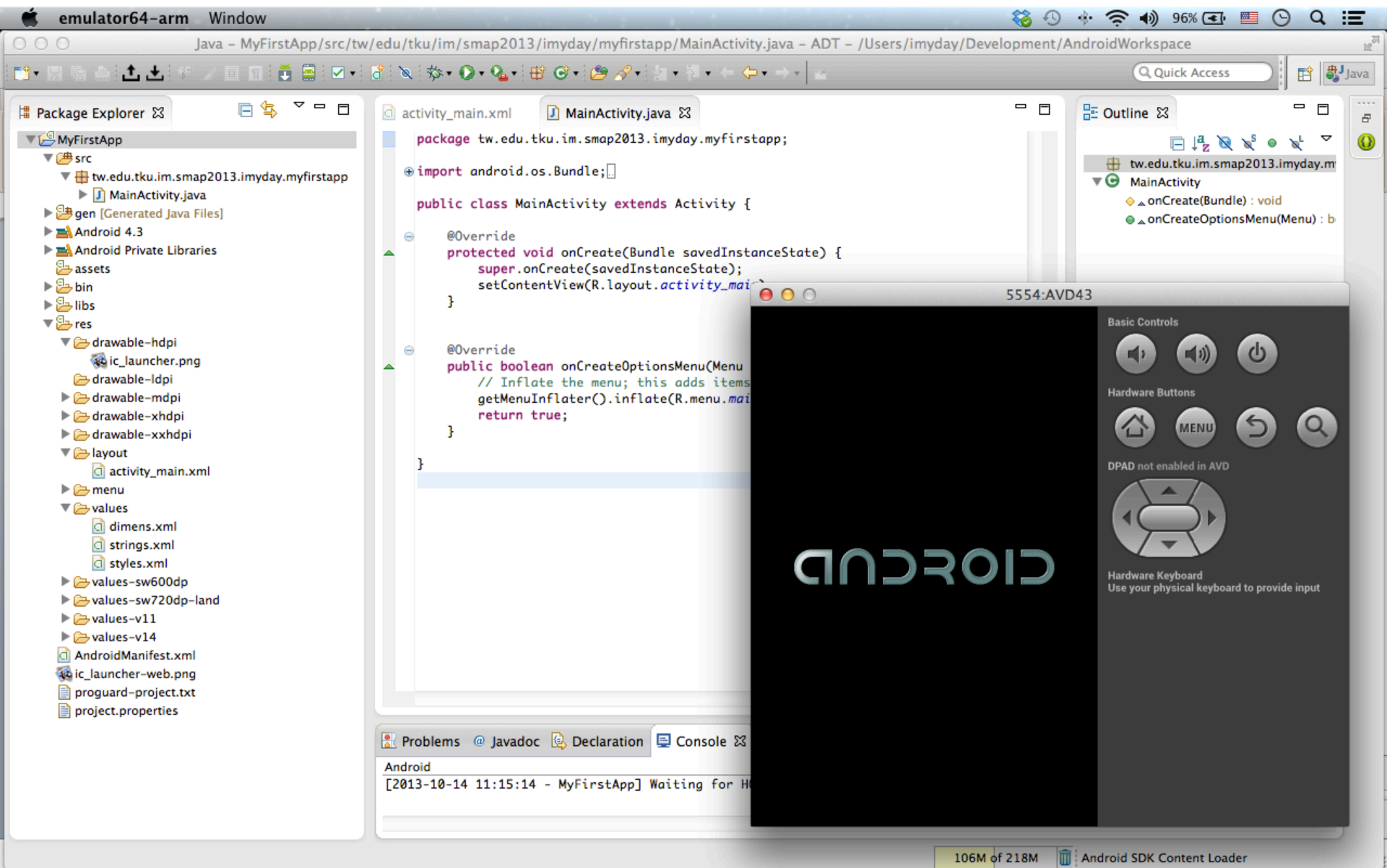
Cancel OK Refresh Manager...

Android
[2013-10-14 11:13:57 - SDK Manager] hw.ramSize=512

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle): void
 - onCreateOptionsMenu(Menu): b

132M of 218M Launching MyFirstApp: (100%)



Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
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 - libs
 - res
 - drawable-hdpi
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 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java  
  
package tw.edu.tku.im.smap2013.imyday.myfirstapp;  
  
import android.os.Bundle;  
  
public class MainActivity extends Activity {  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
    }  
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

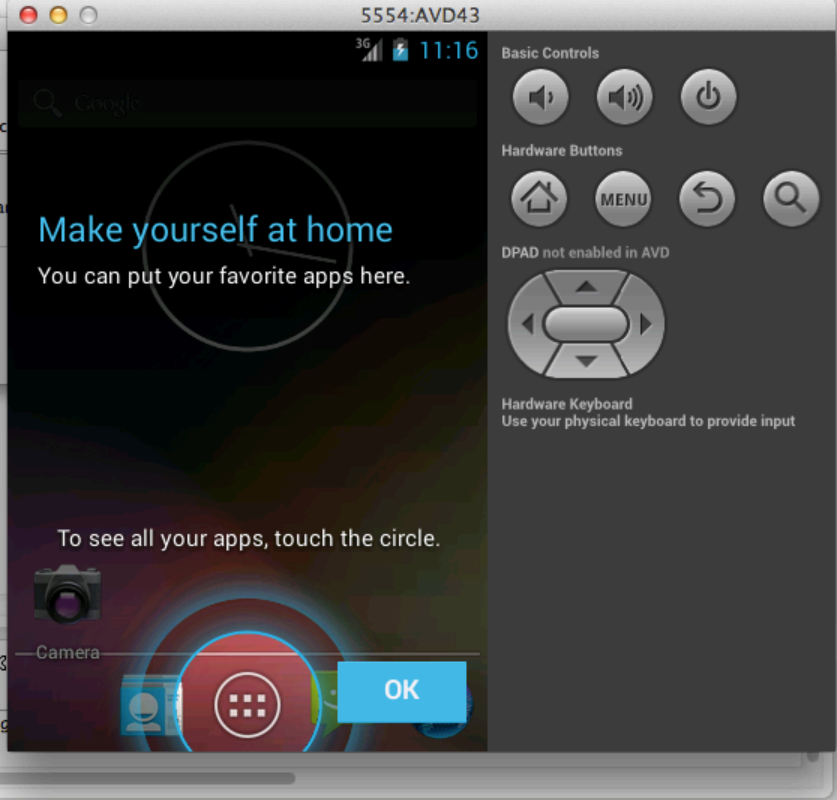
5554:AVD43

Auto Monitor Logcat

Would you like ADT to automatically monitor logcat output for messages from applications in the workspace?

No, do not monitor logcat output.

Yes, monitor logcat and display logcat view if there are messages with priority higher than:



Problems @ Javadoc Declaration Console

Android

[2013-10-14 11:16:43 - MyFirstApp] ActivityManag

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
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 - values-sw600dp
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 - values-v11
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 - AndroidManifest.xml
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 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java
```

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;

public class MainActivity extends Activity {

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

Auto Monitor Logcat

Would you like ADT to automatically monitor logcat output for messages from applications in the workspace?

No, do not monitor logcat output.

Yes, monitor logcat and display logcat view if there are messages with priority higher than:

OK

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

Problems @ Javadoc Declaration Console

Android

[2013-10-14 11:16:43 - MyFirstApp] ActivityManager: Starting: Intent { act=android.intent.action.MAIN cat=[android.intent.c

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
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 - res
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 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
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 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java  
  
package tw.edu.tku.im.smap2013.imyday.myfirstapp;  
  
import android.os.Bundle;  
  
public class MainActivity extends Activity {  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
    }  
  
    @Override  
    public boolean onCreateOptionsMenu(Menu menu) {  
        // Inflate the menu; this adds items to the menu.  
        getMenuInflater().inflate(R.menu.menu_main, menu);  
        return true;  
    }  
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

5554:AVD43 11:18

Basic Controls

- Hardware Buttons
- DPAD not enabled in AVD
- Hardware Keyboard Use your physical keyboard to provide input

APPS WIDGETS

API Demos	Browser	Calculator	Calendar
Camera	Clock	Custom Locale	Dev Settings
Dev Tools	Downloads	Email	Gallery
Gestures Builder	Messaging	Music	My First App

Problems Javadoc Declaration Console

Saved Filters + - Search for messages. Accepts Java

Package Explorer

- MyFirstApp
 - src
 - tw.edu.tku.im.smap2013.imyday.myfirstapp
 - MainActivity.java
 - gen [Generated Java Files]
 - Android 4.3
 - Android Private Libraries
 - assets
 - bin
 - libs
 - res
 - drawable-hdpi
 - ic_launcher.png
 - drawable-ldpi
 - drawable-mdpi
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 - drawable-xxhdpi
 - layout
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-sw600dp
 - values-sw720dp-land
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 - proguard-project.txt
 - project.properties

```
activity_main.xml MainActivity.java
```

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the menu.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.m
 - MainActivity
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : b

5554:AVD43 11:19

My First App

Hello world!

Basic Controls

- Hardware Buttons
- DPAD not enabled in AVD
- Hardware Keyboard Use your physical keyboard to provide input

- Getting Started ^
- Building Your First App ^
 - Creating an Android Project
 - Running Your Application
 - Building a Simple User Interface
 - Starting Another Activity
- Adding the Action Bar v
- Supporting Different Devices v
- Managing the Activity Lifecycle v
- Building a Dynamic UI with Fragments v
- Saving Data v
- Interacting with Other Apps v
- Building Apps with Content Sharing v
- Building Apps with Multimedia v
- Building Apps with Graphics & Animation v
- Building Apps with Connectivity & the Cloud v
- Building Apps with User Info & Location v
- Best Practices for v

on the second activity.

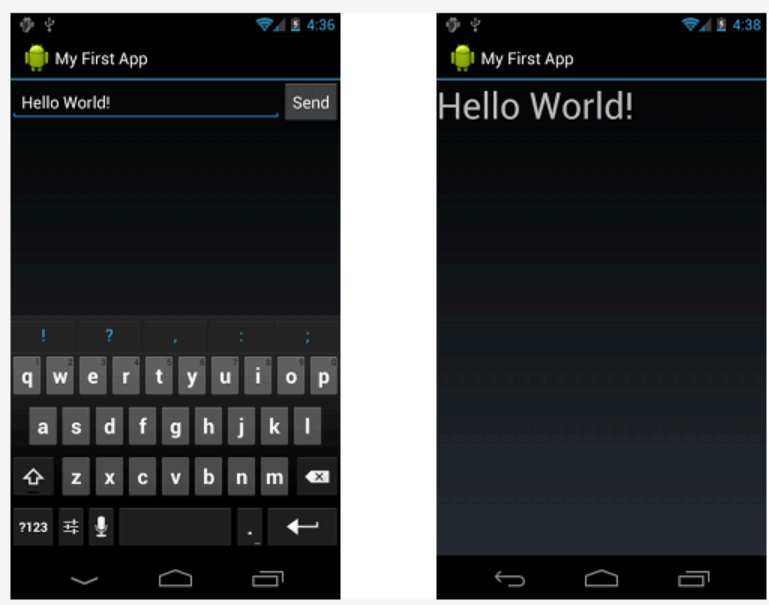


Figure 2. Both activities in the final app, running on Android 4.0.

That's it, you've built your first Android app!

To learn more, follow the link below to the next class.

+1 350

< PREVIOUS NEXT >

NEXT CLASS: ADDING THE ACTION BAR >

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Package Explorer

- tw.edu.tku.im.smap2013.imyday.myfirsta
 - DisplayMessageActivity.java
 - MainActivity.java
- gen [Generated Java Files]
- Android 4.3
- Android Private Libraries
- assets
- bin
 - dexedLibs
 - res
- AndroidManifest.xml
- classes.dex
- jarlist.cache
- MyFirstApp.apk
- resources.ap_
- libs
- res
 - drawable-hdpi
 - drawable-ldpi
 - drawable-mdpi
 - drawable-xhdpi
 - drawable-xxhdpi
 - layout
 - activity_display_message.xml
 - activity_main.xml
 - menu
 - values
 - dimens.xml
 - strings.xml
 - styles.xml
 - values-en
 - strings.xml
 - values-sw600dp
 - values-sw720dp-land
 - values-v11
 - values-v14
 - values-zh-rTW

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.content.Intent;
import android.widget.EditText;

public class MainActivity extends Activity {
    public final static String EXTRA_MESSAGE = "tw.edu.tku.im.smap2013.imyday.my";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the menu.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }
    /** Called when the user clicks the Send button */
    public void sendMessage(View view) {
        Intent intent = new Intent(this, DisplayMessageActivity.class);
        EditText editText = (EditText) findViewById(R.id.edit_message);
        String message = editText.getText().toString();
        intent.putExtra(EXTRA_MESSAGE, message);
        startActivity(intent);
    }
}
```

Outline

- tw.edu.tku.im.smap2013.imyday.myfirsta
 - MainActivity
 - EXTRA_MESSAGE : String
 - onCreate(Bundle) : void
 - onCreateOptionsMenu(Menu) : boolean
 - sendMessage(View) : void

5554:AVD43

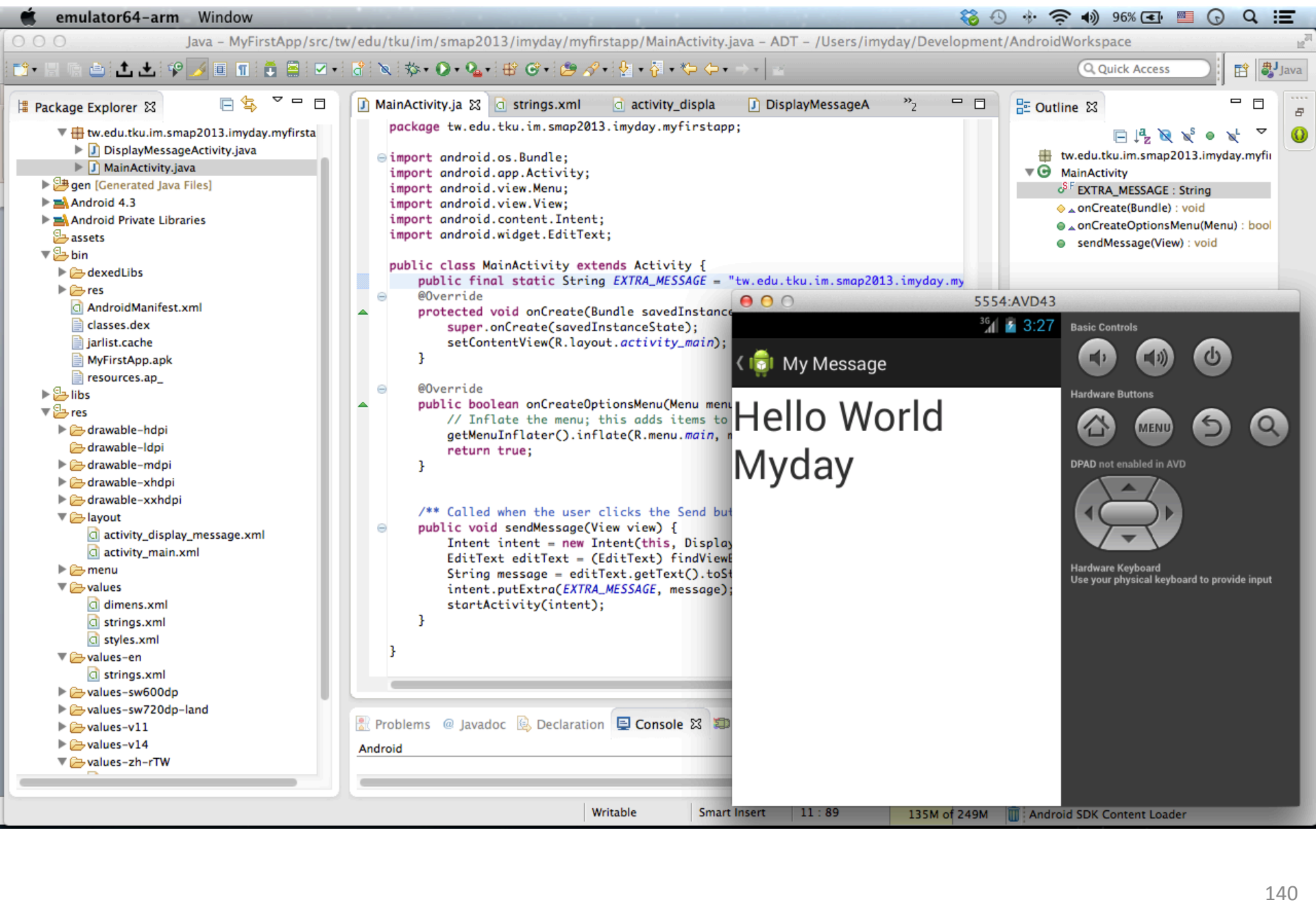
My First App

Hello World Myday | Send

Basic Controls

- Hardware Buttons
- DPAD not enabled in AVD
- Hardware Keyboard

Use your physical keyboard to provide input



```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;
import android.app.Activity;
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public class MainActivity extends Activity {
    public final static String EXTRA_MESSAGE = "tw.edu.tku.im.smap2013.imyday.my";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the menu.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }

    /** Called when the user clicks the Send button */
    public void sendMessage(View view) {
        Intent intent = new Intent(this, DisplayMessageActivity.class);
        EditText editText = (EditText) findViewById(R.id.edit_message);
        String message = editText.getText().toString();
        intent.putExtra(EXTRA_MESSAGE, message);
        startActivity(intent);
    }
}
```

5554:AVD43

3G 3:27

My Message

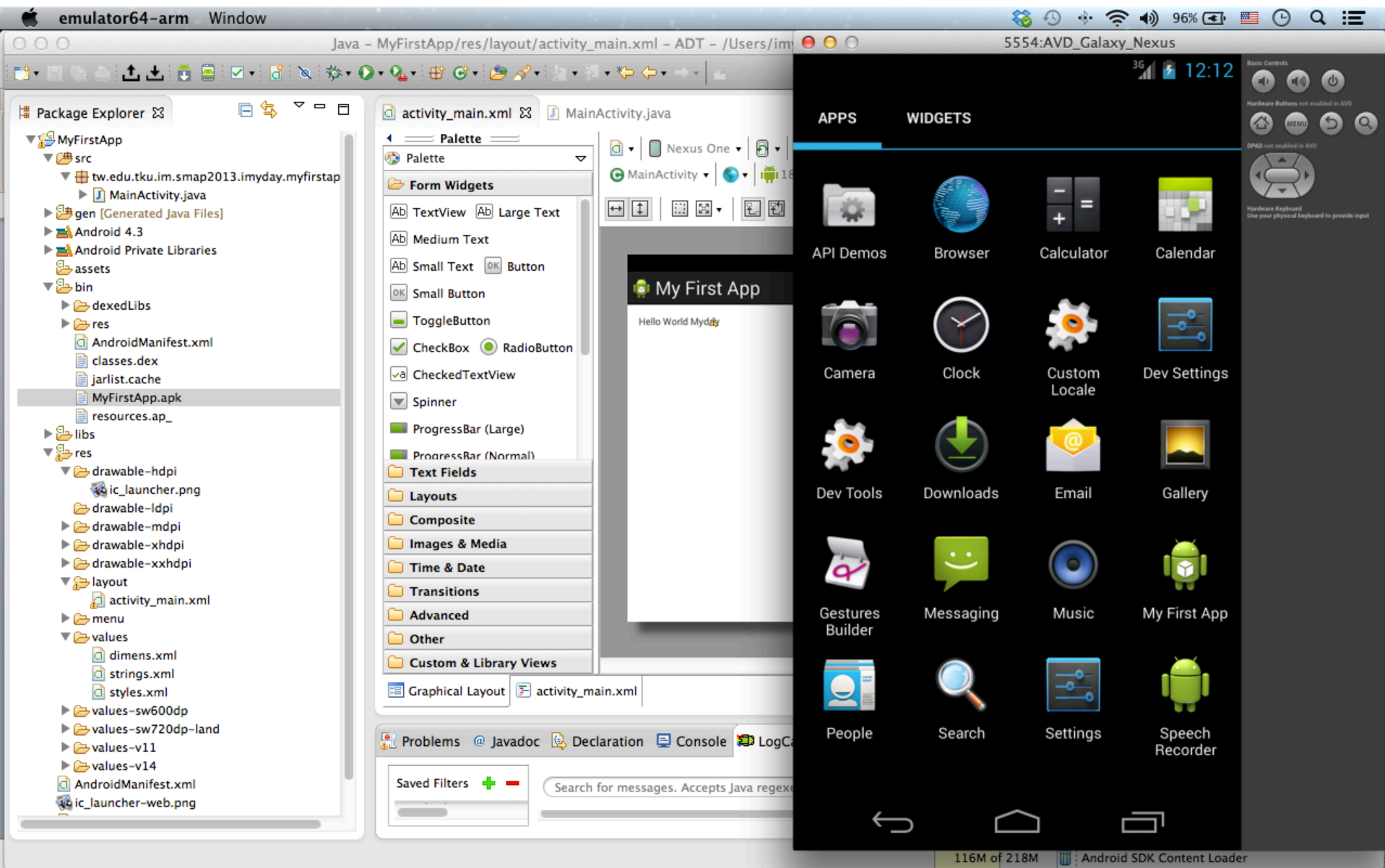
Hello World Myday

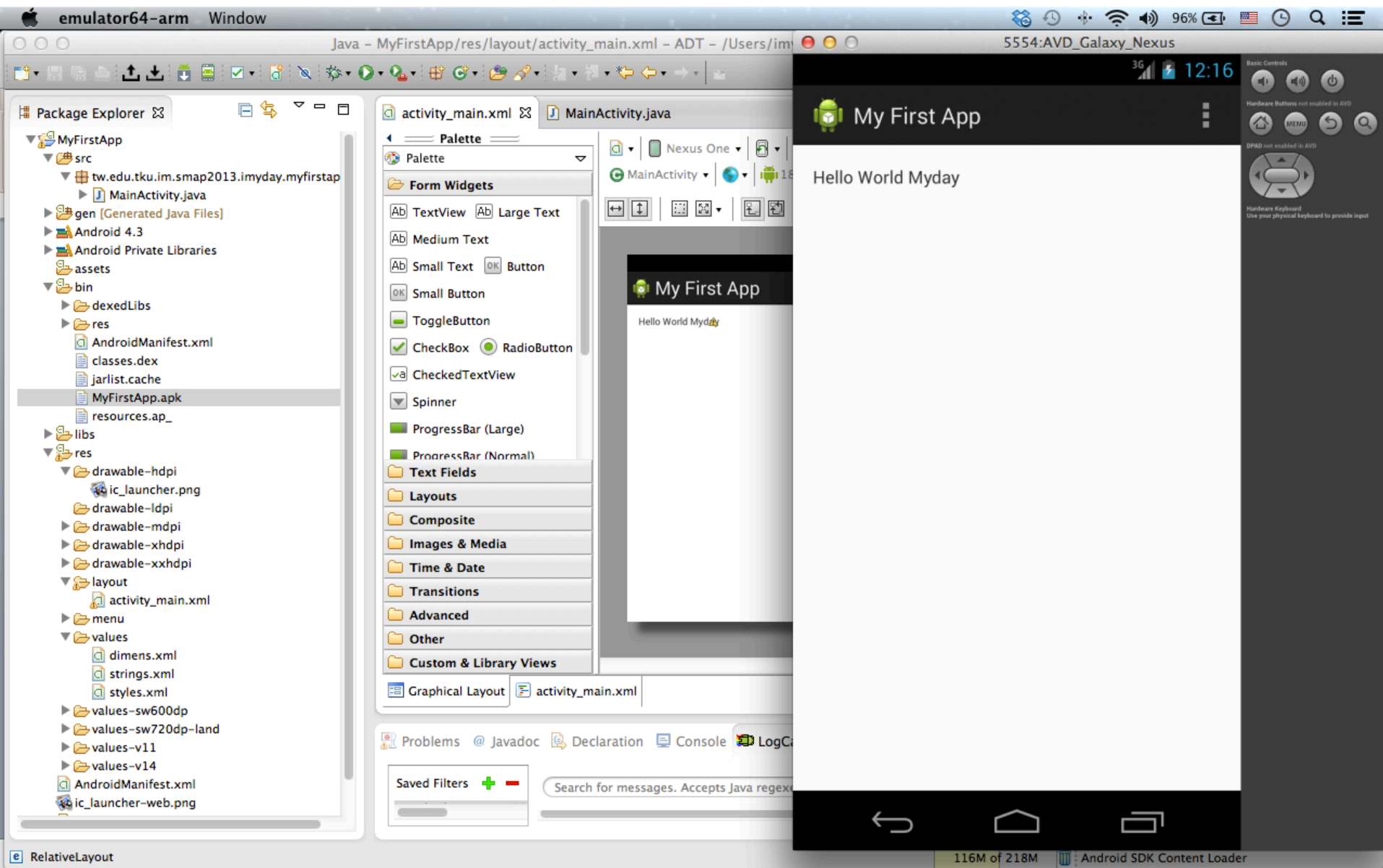
Basic Controls

Hardware Buttons

DPAD not enabled in AVD

Hardware Keyboard
Use your physical keyboard to provide input





activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<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"
    android:orientation="horizontal">
    <EditText android:id="@+id/edit_message"
        android:layout_weight="1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="@string/edit_message" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/button_send"
        android:onClick="sendMessage" />
</LinearLayout>
```

activity_display_message.xml

```
<RelativeLayout 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"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".DisplayMessageActivity" >

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

</RelativeLayout>
```


strings.xml

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

  <string name="app_name">My First App</string>
  <string name="action_settings">Settings</string>
  <string name="hello_world">Hello world!</string>
  <string name="edit_message">Enter a message</string>
  <string name="button_send">Send</string>
  <string name="title_activity_main">MainActivity</string>
  <string name="title_activity_display_message">My Message</string>

</resources>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="tw.edu.tku.im.smap2013.imyday.myfirstapp"
    android:versionCode="1"
    android:versionName="1.0" >

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

    <application
        android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >
        <activity
            android:name="tw.edu.tku.im.smap2013.imyday.myfirstapp.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>
        <activity
            android:name="tw.edu.tku.im.smap2013.imyday.myfirstapp.DisplayMessageActivity"
            android:label="@string/title_activity_display_message"
            android:parentActivityName="tw.edu.tku.im.smap2013.imyday.myfirstapp" >
            <meta-data
                android:name="android.support.PARENT_ACTIVITY"
                android:value="tw.edu.tku.im.smap2013.imyday.myfirstapp" />
            </activity>
    </application>

</manifest>
```

DisplayMessageActivity.java

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.MenuItem;
import android.support.v4.app.NavUtils;
import android.annotation.SuppressLint;
import android.annotation.TargetApi;
import android.os.Build;
import android.content.Intent;
import android.widget.TextView;

public class DisplayMessageActivity extends Activity {

    @SuppressWarnings("NewApi")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_display_message);
        // Show the Up button in the action bar.
        setupActionBar();

        //Get the message from the intent
        Intent intent = getIntent();
        String message = intent.getStringExtra(MainActivity.EXTRA_MESSAGE);

        //Great the text view
        TextView textView = new TextView(this);
        textView.setTextSize(40);
        textView.setText(message);

        setContentView(textView);
    }
    ...
}
```

MainActivity.java

```
package tw.edu.tku.im.smap2013.imyday.myfirstapp;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.content.Intent;
import android.widget.EditText;

public class MainActivity extends Activity {
    public final static String EXTRA_MESSAGE = "tw.edu.tku.im.smap2013.imyday.myfirstapp.MESSAGE";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }

    /** Called when the user clicks the Send button */
    public void sendMessage(View view) {
        Intent intent = new Intent(this, DisplayMessageActivity.class);
        EditText editText = (EditText) findViewById(R.id.edit_message);
        String message = editText.getText().toString();
        intent.putExtra(EXTRA_MESSAGE, message);
        startActivity(intent);
    }
}
```

DisplayMessageActivity.java

```
/**
 * Set up the {@link android.app.ActionBar}, if the API is available.
 */
@TargetApi(Build.VERSION_CODES.HONEYCOMB)
private void setupActionBar() {
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.HONEYCOMB) {
        getActionBar().setDisplayHomeAsUpEnabled(true);
    }
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.display_message, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case android.R.id.home:
            // This ID represents the Home or Up button. In the case of this
            // activity, the Up button is shown. Use NavUtils to allow users
            // to navigate up one level in the application structure. For
            // more details, see the Navigation pattern on Android Design:
            //
            // http://developer.android.com/design/patterns/navigation.html#up-vs-back
            //
            NavUtils.navigateUpFromSameTask(this);
            return true;
    }
    return super.onOptionsItemSelected(item);
}
}
```

Alternatives for Developing Android Apps

- MIT App Inventor
 - drag-and-drop Android app development tool.
 - <http://appinventor.mit.edu/>
- Appery.io
 - develop apps for Android (iOS / Windows Phone).
 - <http://appery.io>
- Appnotch
 - drag-and-drop service that allows you to develop apps for Android (iOS).
 - <http://www.appnotch.com/>

MIT App Inventor

The screenshot shows the MIT App Inventor website homepage. At the top, there is a navigation bar with the MIT App Inventor logo, links for 'About Us', 'Blog', and 'Support', and a prominent orange 'Create' button. Below the navigation bar is a social media section with icons for Facebook, Twitter, YouTube, Google+, and LinkedIn, along with a Google Custom Search box. A statistics banner displays: 'Weekly Active Users: 87K', 'Total Registered Users: 1.9M', 'Countries: 195', and 'Apps Built: 4.7M'. The main content area features a large promotional banner with the text 'Your ideas. Your designs. Your apps.' and a large green 'Invent Now' button. Below this banner are four sections: 'Get Started' with a flag icon and a 'Start' button; 'Tutorials' with a lightbulb icon and a 'Tutorials' button; 'Teach' with a laptop icon; and 'Forums' with a speech bubble icon. On the right side, there is a 'Recent News' section with several news items and a 'Tweets' section featuring a tweet from Arjun S (@Arjuninventor) about attending the MIT App Inventor Summit, with a QR code and a link to download the iSafeGuard app from the Google Play Store.

<http://appinventor.mit.edu/>

appery.io

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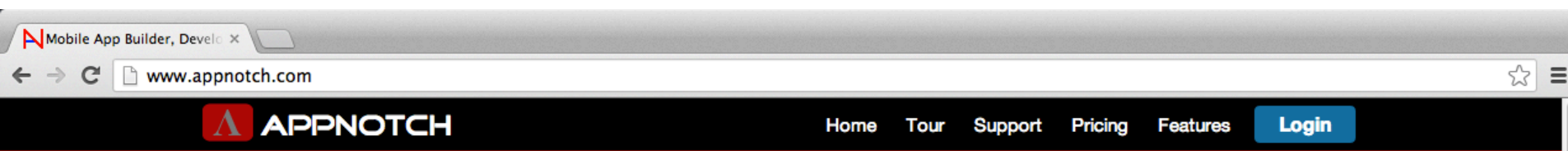
Featured by Mashable TechCrunch Forbes CIO

appery.io

The screenshot displays the Appery.io web editor interface. At the top, the browser address bar shows the URL `appery.io/app/project/f044ff9d-24e0-4f68-9962-f855b35bff3e/editor`. The editor's top navigation bar includes options like 'CLOSE', 'SAVE', 'EXPORT', and 'TEST', along with a 'Database' section and user status indicators. The main workspace is titled 'iMydayApp' and shows a 'Screen1' tab. On the left, a 'CREATE NEW' button is visible, and a project tree lists folders like 'Project', 'App settings', 'Model and Storage', 'Pages', 'Screen1', 'startScreen', 'Dialogs', 'Templates', 'Themes', 'CSS', 'Services', 'JavaScript', and 'Custom components'. The central 'PALETTE' contains various controls categorized under 'DESIGN' and 'DATA', including Button, Group Buttons, Input, Textarea, Datepicker, Label, Link, Radio, Checkbox, Slider, Toggle, Select, List, Image, Grid, and Navbar. The main canvas shows a mobile device view with a green header bar containing the text 'Caption'. On the right, the 'PROPERTIES - Header' panel is open, showing settings for 'Caption', such as 'Zoom Level' (set to 100), 'Text' (Caption), 'Swatch' (Inherit), 'Back Button' (unchecked), 'Back Button Text' (Back), 'Position' (fixed), 'Full Screen' (unchecked), and 'Name' (mobileheader). The 'COMMON' section shows 'Name' (mobileheader) and 'Class Name' (Enter Class Name).

<http://appery.io/>

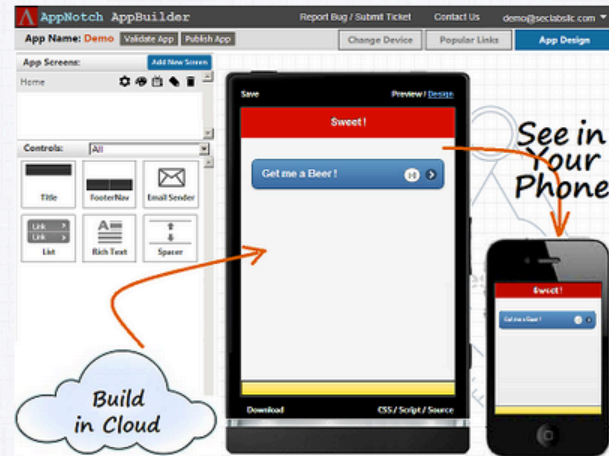
Appnotch



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Did we say you will love the magic?

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References

- Android Developer: <http://developer.android.com/>
- MIT App Inventor: <http://appinventor.mit.edu/>
- Native, Web or Hybrid Mobile Apps?,
<https://www.youtube.com/watch?v=Ns-JS4amITc>