

Android App Development Methodology

Object Oriented Programming · Testing · Debugging

Wizards/
Refactoring

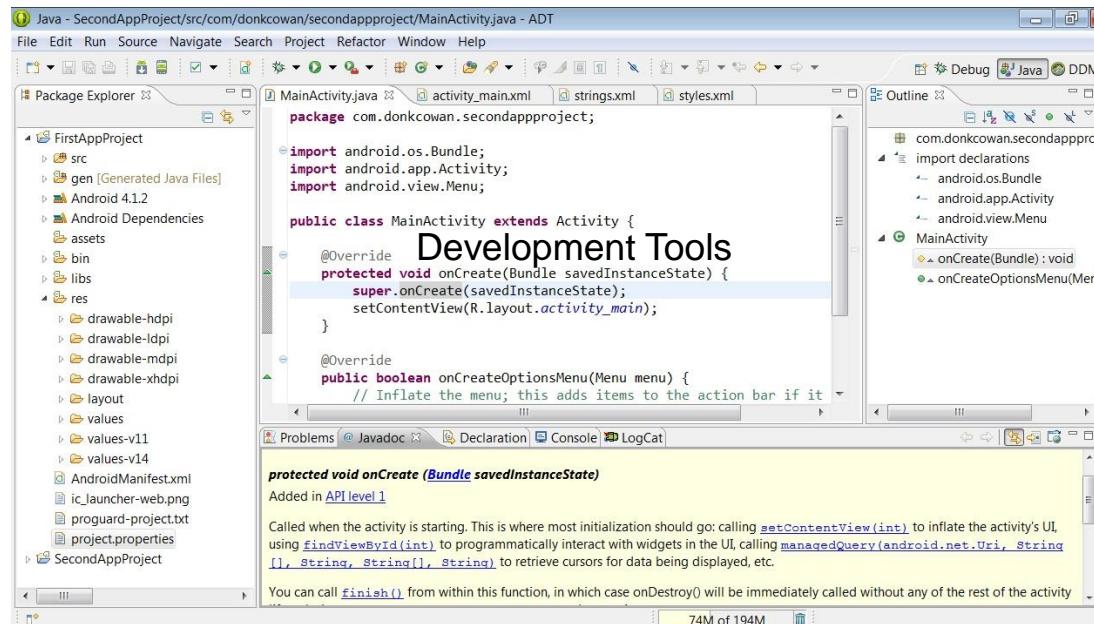
Sample Apps

Sample Code

Libraries/APIs

Hand Code

Applications



Java - SecondAppProject/src/com/donkcowan/secondappproject/MainActivity.java - ADT

File Edit Run Source Navigate Project Refactor Window Help

Package Explorer Main Activity.java activity_main.xml strings.xml styles.xml

```
package com.donkcowan.secondappproject;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;

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
        // available.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }
}
```

Development Tools

protected void onCreate (Bundle savedInstanceState)

Added in API level 1

Called when the activity is starting. This is where most initialization should go: calling `setContentView(int)` to inflate the activity's UI, using `findViewById(int)` to programmatically interact with widgets in the UI, calling `managedQuery(android.net.Uri, String[], String[], String[])` to retrieve cursors for data being displayed, etc.

You can call `finish()` from within this function, in which case `onDestroy()` will be immediately called without any of the rest of the activity

74M of 194M

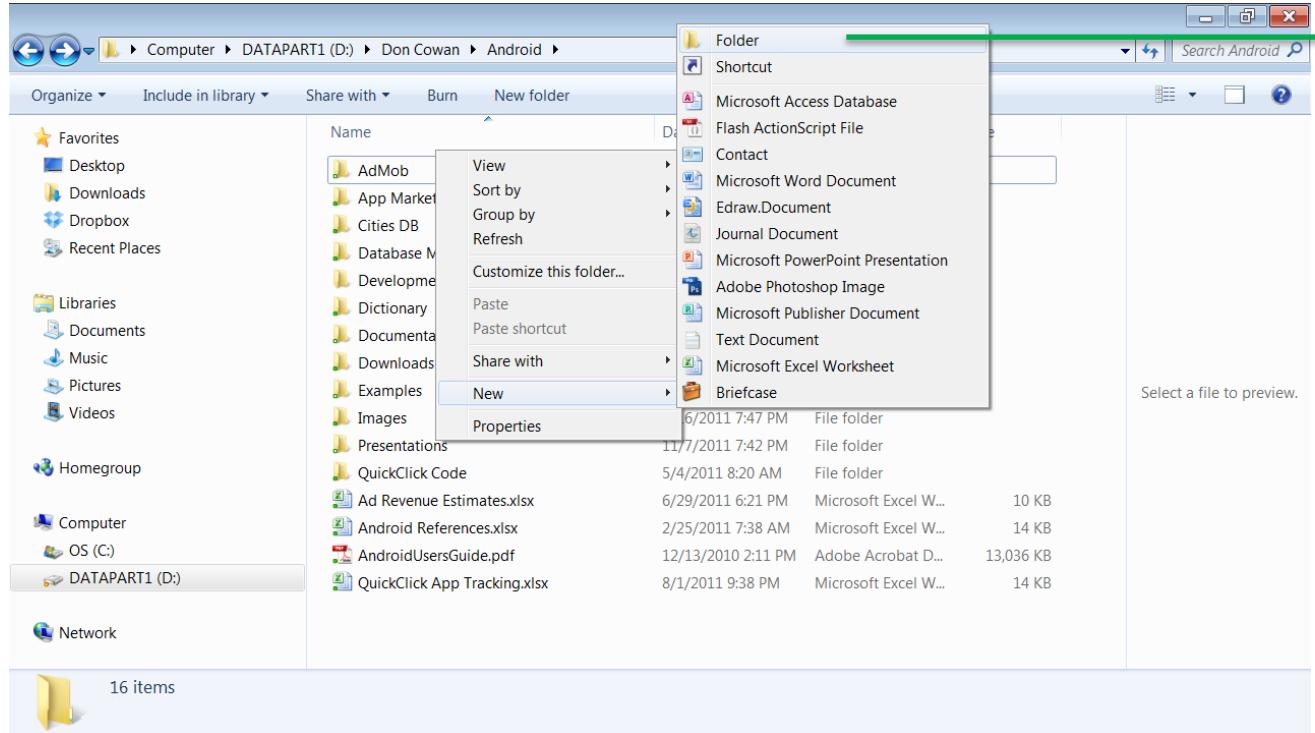
Virtual Devices · Real Smartphones/Tablets

Android Launcher Icons



First App Project
Custom Launcher Icon

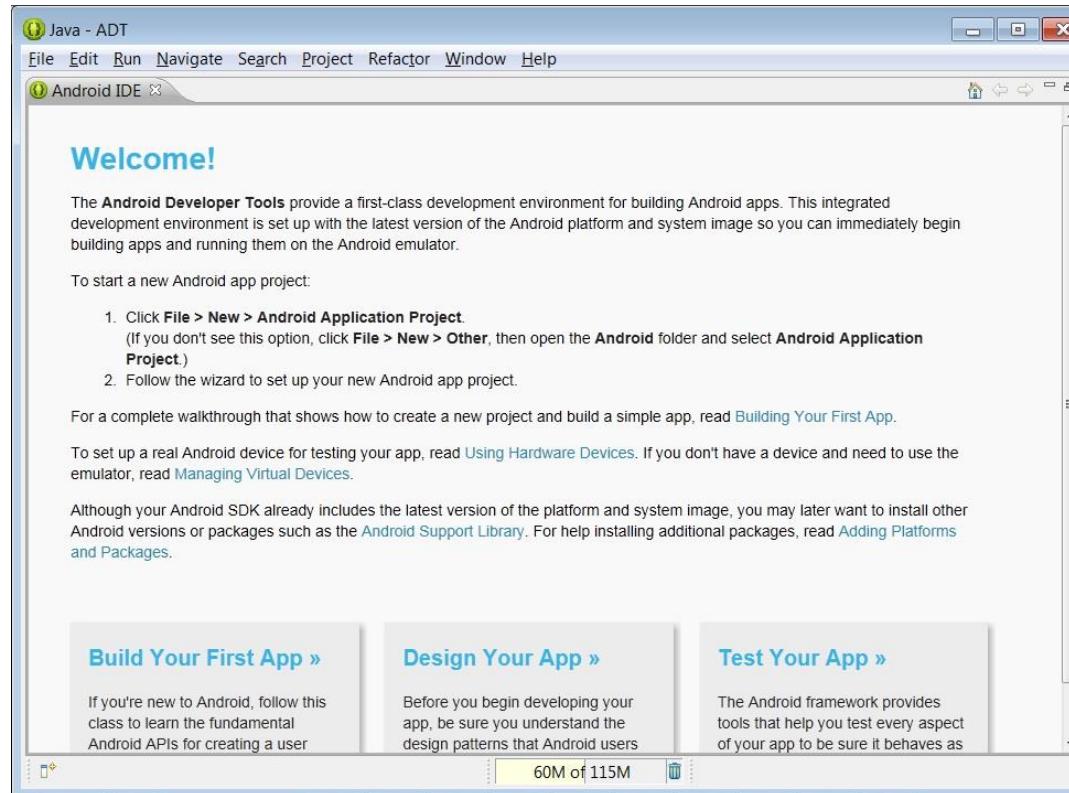
Creating a New Workspace



Android Course Workspace

An Android workspace
can be placed anywhere
in your file system.

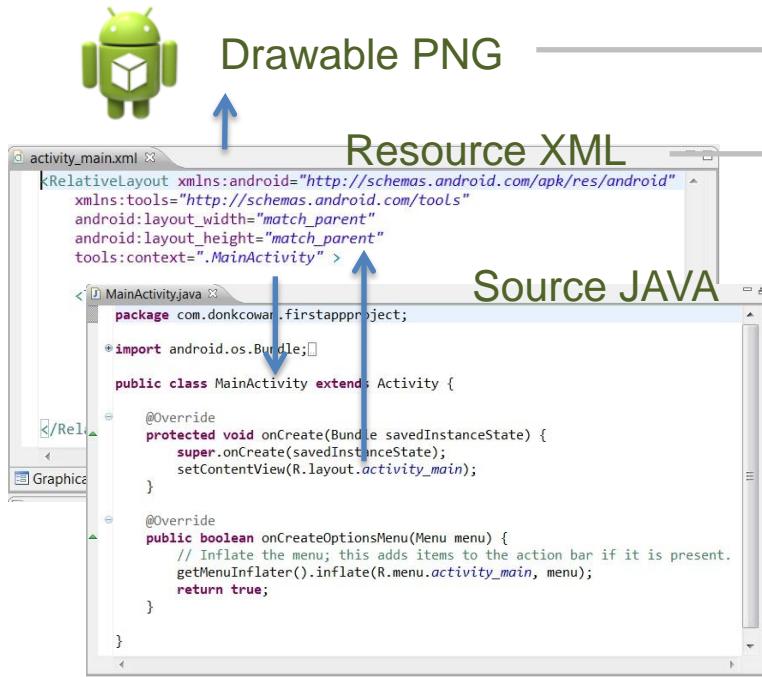
Eclipse ADT New Workspace Screen



Android Project Folders and Files

Developer	System	FirstAppProject	
X		↳ src	Project Folder
	X	↳ gen [Generated Java Files]	App Java source code
	X	↳ Android 4.1.2	Generated Java for accessing app resources
	X	↳ Android Dependencies	Android platform classes
X		↳ assets	Android platform classes
	X	↳ bin	Assets (e.g., database files)
	X	↳ libs	Staging area for compiled app code
X		↳ res	Android libraries
X		↳ drawable-hdpi	Resources
X		↳ drawable-ldpi	High density images (.png)
X		↳ drawable-mdpi	Low density images (.png)
X		↳ drawable-xhdpi	Medium density images (.png)
X		↳ layout	Extra high density images (.png)
X		↳ values	Layouts for app display screens (XML)
X		↳ values-v11	Values (e.g., styles, strings, dimensions, colors) (XML)
X		↳ values-v14	Values for a specific Android version (XML)
X		AndroidManifest.xml	Values for a specific Android version (XML)
X		ic_launcher-web.png	Manifest (XML)
X		proguard-project.txt	Launcher image (.png)
X	X	project.properties	ProGuard configuration
			Project properties (e.g., target release number)

First App Project Components



The screenshot shows an IDE interface with two open files:

- Source JAVA:** The file `MainActivity.java` contains the following code:

```
package com.donckowar.firstappproject;

import android.os.Bundle;

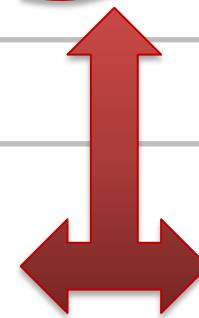
public class MainActivity extends Activity {

    @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.activity_main, menu);
        return true;
    }
}
```
- Resource XML:** The file `activity_main.xml` contains the following XML:

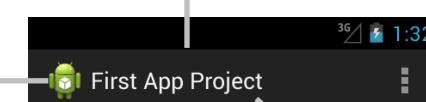
```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
```

System Android/Java



Layout
XML

Manifest XML



Style Values
XML

Menu
XML

String Values
XML

Eclipse Tool Buttons

Button	Description	Button	Description
	Open a new perspective		Save the active editor contents
	Save the contents of all editors		Save editor contents under a new name or location
	Opens the search dialog		Print editor contents
	Open a resource creation wizard		Open a file creation wizard
	Open a folder creation wizard		Open a project creation wizard
	Open the import wizard		Open the export wizard
	Run incremental build		Run a program
	Debug a program		Run an external tool or Ant
	Cut selection to clipboard		Copy selection to clipboard
	Paste selection from clipboard		Undo most recent edit
	Redo most recent undone edit		Navigate to next item in a list
	Navigate to previous item in a list		Navigate forwards
	Navigate backwards		Navigate up one level
	Add bookmark or task		Open a view's drop down menu
	Close view or editor		Pin editor to prevent automatic reuse
	Filter tasks or properties		Go to a task, problem, or bookmark in the editor
	Restore default properties		Show items as a tree
	Refresh view contents		Sort list in alphabetical order
	Cancel a long running operation		Delete selected item or content
	Last edit location		Toggle Mark Occurrences
	Toggle Block Selection Mode		Show Whitespace Characters
	Show source of selected element only		

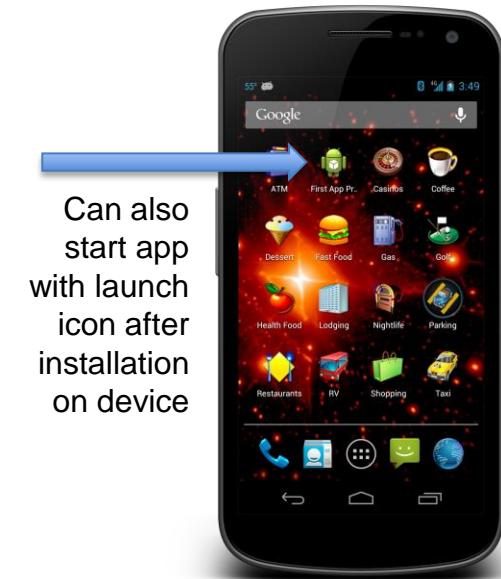
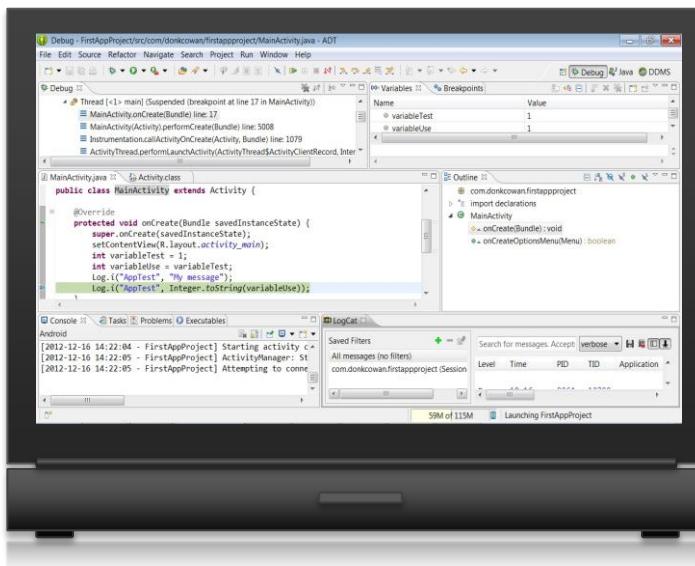
Eclipse Debug Test Code

Add to imports  **import android.util.Log**

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    int variableTest = 1;
    int variableUse = variableTest;
    Log.i("AppTest", "My message");
    Log.i("AppTest", Integer.toString(variableUse));
}
```

Add to onCreate() method

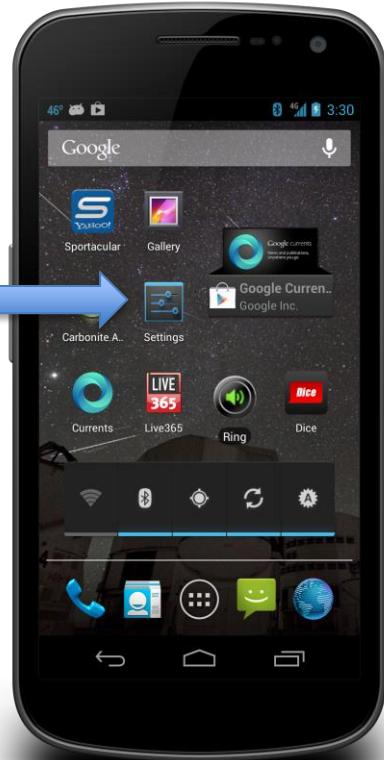
Running Your Apps on Real Mobile Devices



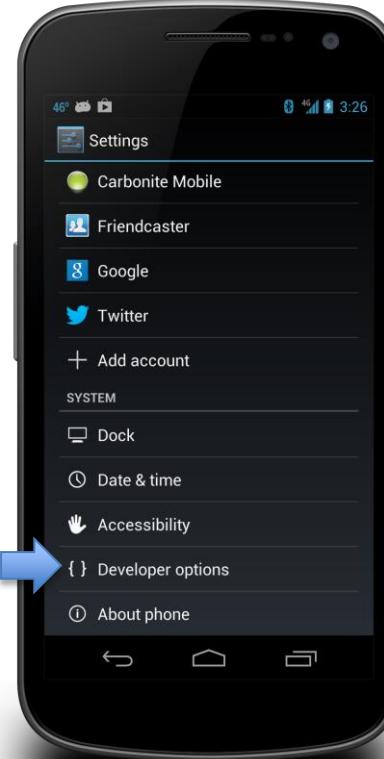
Can also start app with launch icon after installation on device

Setting Up USB Debugging on an Android Device

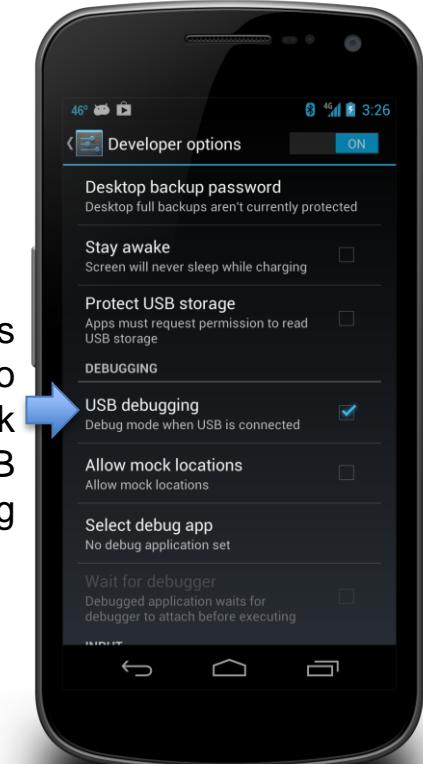
Press
Settings



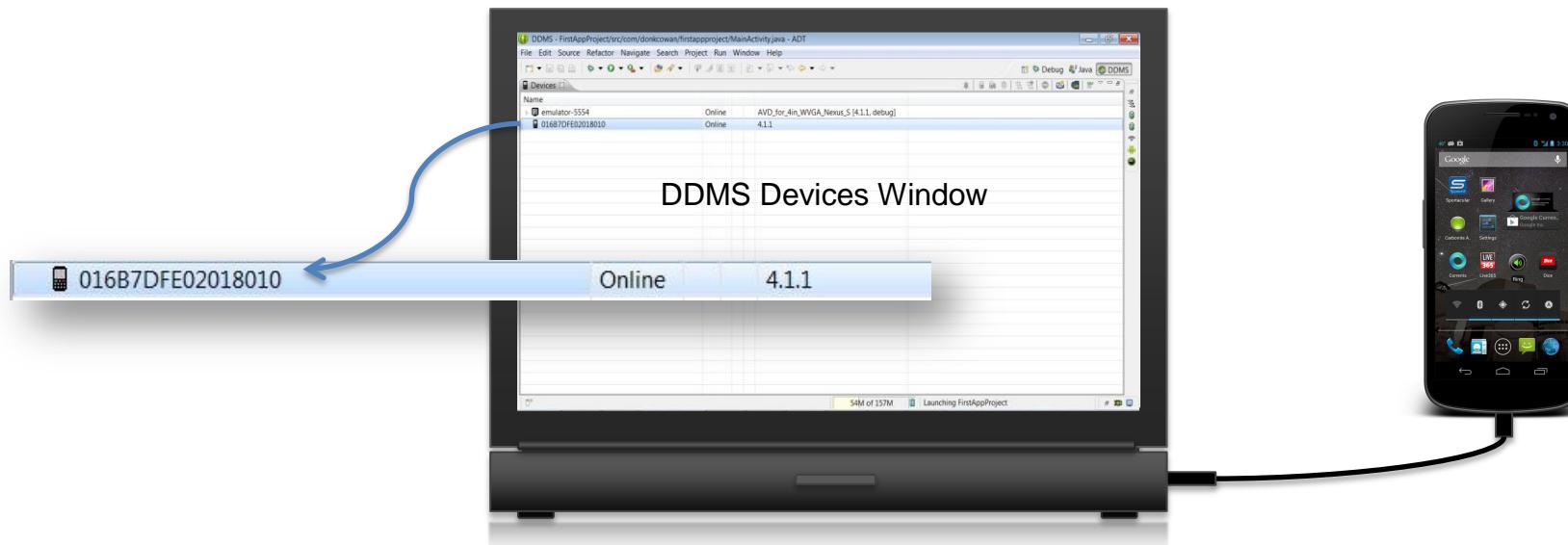
Press
Developer
options



Press
to
check
USB
debugging



Attaching an Android Device to DDMS via USB Cable



Additional Android Development Resources

- Q&A Websites
- Internet Search
- Conferences
- Meet-ups
- Books
- Tutorials

Eclipse Debug Test Code

Add to imports  **import android.util.Log**

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    int variableTest = 1;
    int variableUse = variableTest;
    Log.i("AppTest", "My message");
    Log.i("AppTest", Integer.toString(variableUse));
}
```

Add to onCreate() method

Find Meetup groups ×

www.meetup.com/find/?keywords=android&userFreeform=Paris%2C+France&mId=c1011740&mcName=&category=

Meetup Find Start

What's new Help Log in Sign up

Explore Meetups

within 25 miles of Paris, France

Show me Meetups my friends are in

[Connect with Facebook](#)

All

android

"Android" 12

Arts & Culture
Career & Business
Cars & Motorcycles
Community & Environment
Dancing
Education & Learning
Fashion & Beauty
Fitness

Sort by Best Match

Meetup Groups	Thu Dec 20	Fri Dec 21	Sat Dec 22	Sun Dec 23	Mon Dec 24	Tue Dec 25	Wed Dec 26
 Paris Android User Group 1,379 Membres	 Paris Android LiveCode 182 Bugdroids	 Intel Developers Meetup 177 Développeurs					
 Corona SDK - Paris Meetup	 Paris Titanium	 GDG Paris - Google Developer Group					



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GUIDE NEW

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Got it!



ANDROID MARKET SEARCH

Don Cowan
Director of Software Engineering,
marketimpacts.com

December 13, 2011
San Francisco, CA

00:03 / 33:39

CC

https://www.youtube.com/watch?feature=player_embedded&v=8KGkKYsqlR8

Android Market Search



MarakanaTechTV - 357 videos



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Day 1

Android, Google+, Project Glass

Day 2

Chrome, Cloud, Project Glass

Announcements

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Google Analytics app for Android enables users t...

Jun 29, 2012 1:12PM

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dkcowan

About 3,400 results

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Google I/O 2010 - Keynote Day 2 Android Demo For all I/O 2010 sessions, please go to code.google.com
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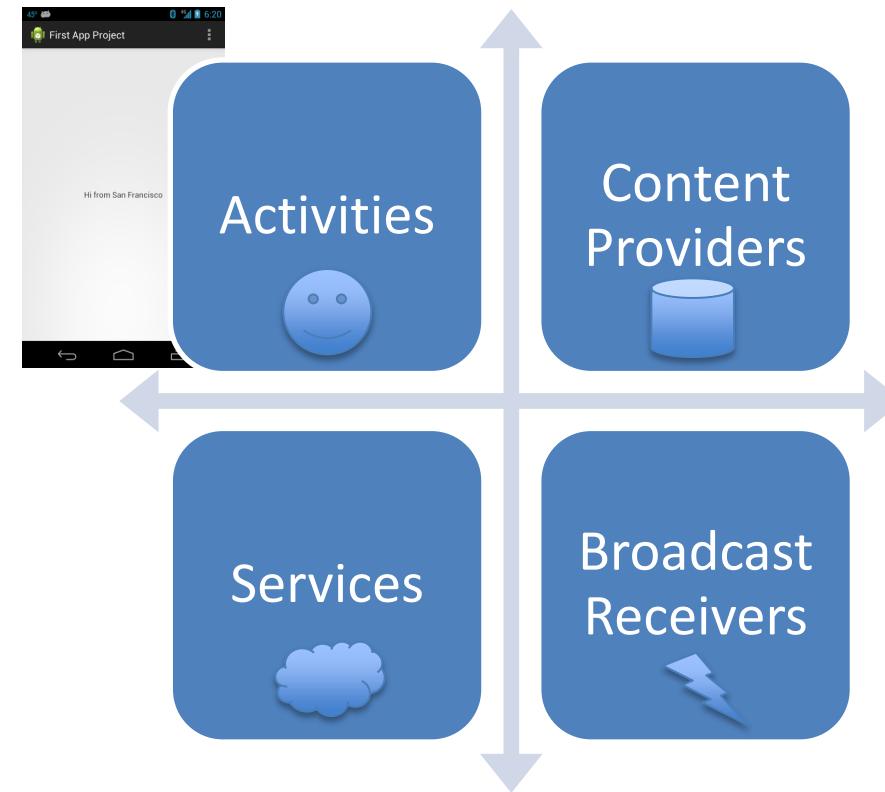
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Additional Android Development Resources

- Q&A Websites
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- Tutorials

Android App Components

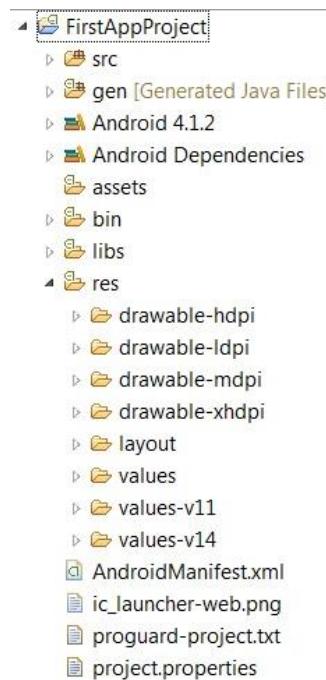


Each type of app component has its own...

- Entry Points
- Purpose
- Life Cycle

<http://developer.android.com/guide/components/fundamentals.html#Components>

Our First App Structure



Components

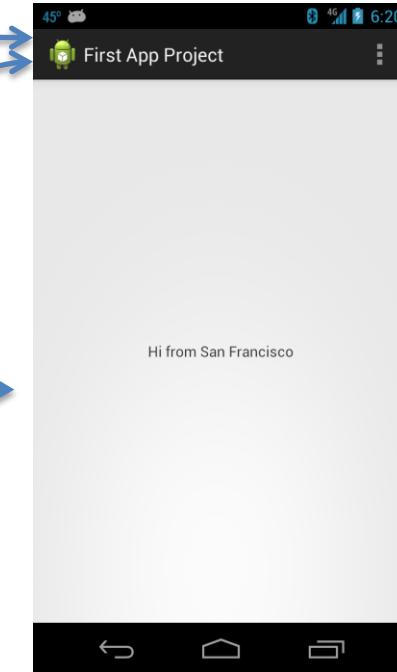
- Activity ←
- Content Providers
- Services
- Broadcast Receivers

Assets

- Files

Resources

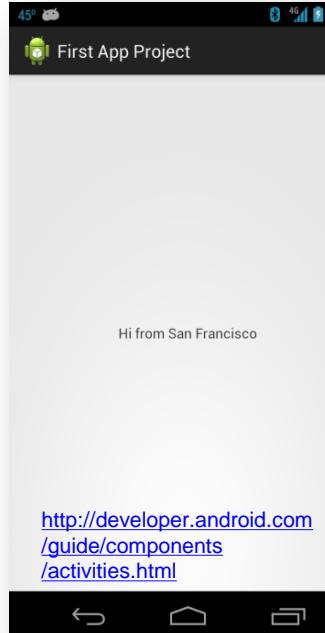
- Images ←
- XML ←



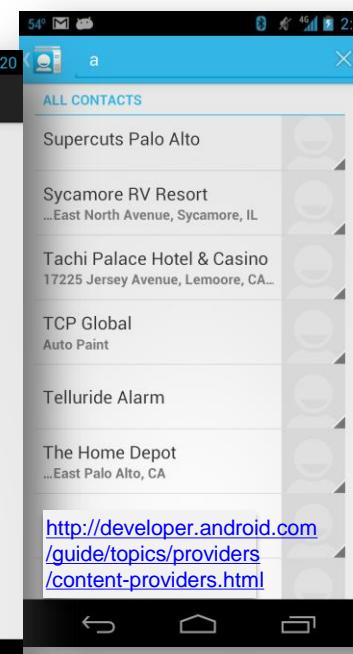
Component Characteristics



Activities



Content Providers



Broadcast Receivers

- Can create status bar notifications
- No user interface other than status bar
- Works in background
- Responds to events
- Short operations only
- Example: display notification when contact sends a message

<http://developer.android.com/reference/android/content/BroadcastReceiver.html>

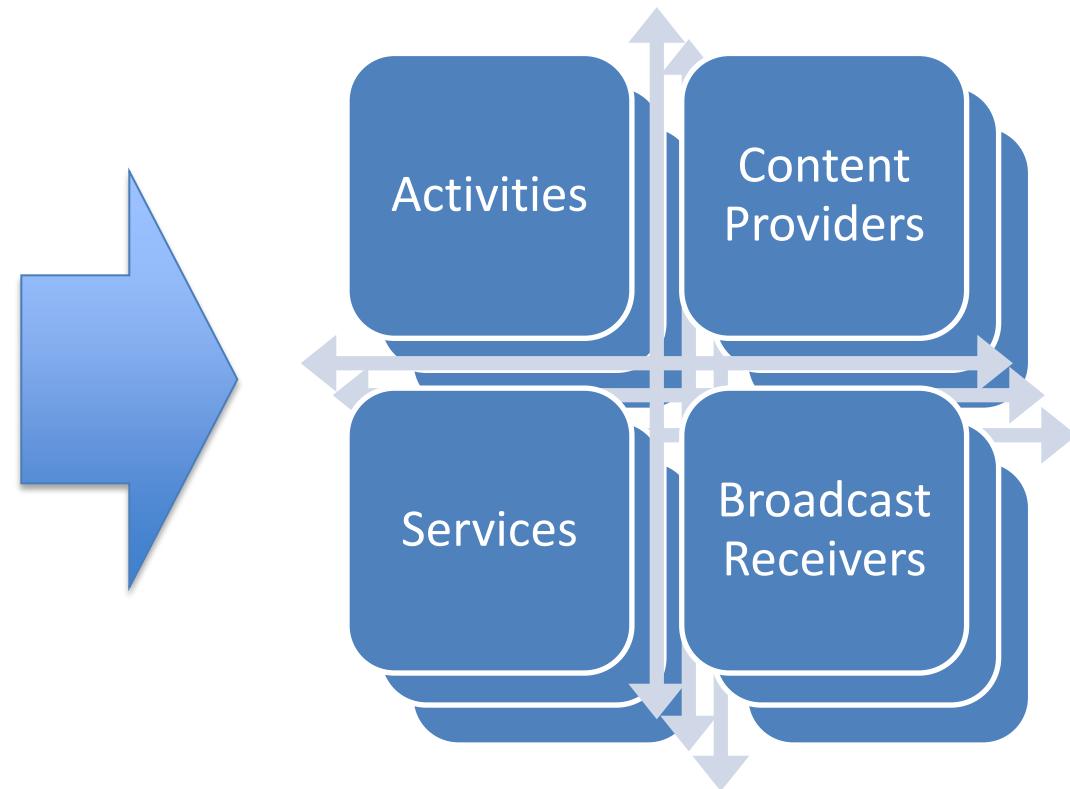
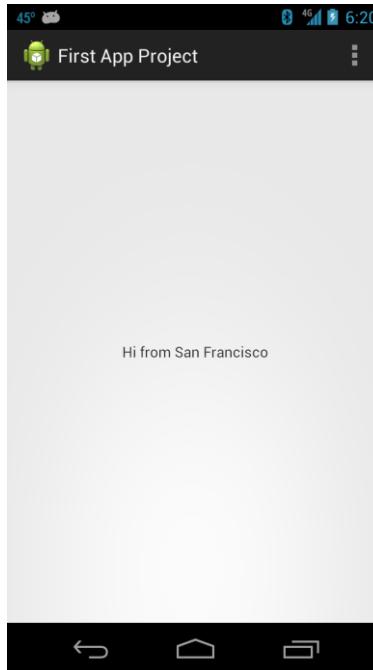
Services

- No user interaction
- Works in background
- Take over from Broadcast Receivers for longer operations
- Example: perform automatic data backup at certain time intervals

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



Android App Progression in Complexity



Android APIs and App Complexity

Complexity

More

Less

Android APIs

android.accessibilityservice
 android.accounts
 android.animation
 android.app
 android.app.admin
 android.app.backup
 android.appwidget
 android.bluetooth
 android.content
 android.content.pm
 android.content.res
 android.database
 android.database.sqlite
 android.drm
 android.gesture
 android.graphics
 android.graphics.drawable
 android.graphics.drawable.shapes
 android.hardware
 android.hardware.display
 android.hardware.input
 android.hardware.usb
 android.inputmethodservice
 android.location
 android.media
 android.media.audiofx
 android.media.effect

android.mtp
 android.net
 android.net.http
 android.net.nsd
 android.net.rtp
 android.net.sip
 android.net.wifi
 android.net.wifi.p2p
 android.net.wifi.p2p.nsd
 android.nfc
 android.nfc.tech
 android.opengl
 android.os
 android.os.storage
 android.preference
 android.provider
 android.renderscript
 android.sax
 android.security
 android.service.dreams
 android.service.textservice
 android.service.wallpaper
 android.speech
 android.speech.tts
 android.support.v13.app
 android.support.v4.accessibility
 android.support.v4.app
 android.support.v4.content
 android.support.v4.content.pm

android.support.v4.database
 android.support.v4.net
 android.support.v4.os
 android.support.v4.util
 android.support.v4.view
 android.support.v4.view.accessibility
 android.support.v4.widget
 android.telephony
 android.telephony.cdma
 android.telephony.gsm
 android.test
 android.test.mock
 android.test.suitebuilder
 android.text
 android.text.format
 android.text.method
 android.text.style
 android.text.util
 android.view
 android.view.accessibility
 android.view.animation
 android.view.inputmethod
 android.view.textservice
 android.webkit
 android.widget
 dalvik.bytecode
 dalvik.system
 java.awt.font

java.beans
 java.io
 java.lang
 java.lang.annotation
 java.lang.ref
 java.lang.reflect
 java.math
 java.net
 java.nio
 java.nio.channels
 java.nio.channels.spi
 java.nio.charset
 java.nio.charset.spi
 java.security
 java.security.acl
 java.security.cert
 java.security.interfaces
 java.security.spec
 java.sql
 java.text
 java.util
 java.util.concurrent
 java.util.concurrent.atomic
 java.util.concurrent.locks
 java.util.jar
 java.util.logging
 java.util.prefs
 java.util.regex
 java.util.zip

javax.crypto
 javax.crypto.interfaces
 javax.crypto.spec
 javax.microedition.khronos.egl
 javax.microedition.khronos.opengles
 javax.net
 javax.net.ssl
 javax.security.auth
 javax.security.auth.callback
 javax.security.auth.login
 javax.security.auth.x500
 javax.security.cert
 javax.sql
 javax.xml
 javax.xml.datatype
 javax.xml.namespace
 javax.xml.parsers
 javax.xml.transform
 javax.xml.transform.dom
 javax.xml.transform.sax
 javax.xml.transform.stream
 javax.xml.validation
 javax.xml.xpath
 junit.framework
 junit.runner
 org.apache.http
 org.apache.http.auth
 org.apache.http.params
 org.apache.http.protocol
 org.apache.http.util
 org.json
 org.w3c.dom

org.apache.http.client.entity
 org.apache.http.client.methods
 org.apache.http.client.params
 org.apache.http.client.protocol
 org.apache.http.client.utils
 org.apache.http.conn
 org.apache.http.conn.params
 org.apache.http.conn.routing
 org.apache.http.conn.scheme
 org.apache.http.conn.ssl
 org.apache.http.conn.util
 org.apache.http.cookie
 org.apache.http.cookie.params
 org.apache.http.entity
 org.apache.http.impl
 org.apache.http.impl.auth
 org.apache.http.impl.client
 org.apache.http.impl.conn
 org.apache.http.impl.cookie
 org.apache.http.impl.entity
 org.apache.http.impl.io
 org.apache.http.message
 org.apache.http.params
 org.apache.http.protocol
 org.apache.http.util
 org.json
 org.w3c.dom

Less

Components & Resources

More

Android App Development Methodology

Object Oriented Programming · Testing · Debugging

Wizards/
Refactoring

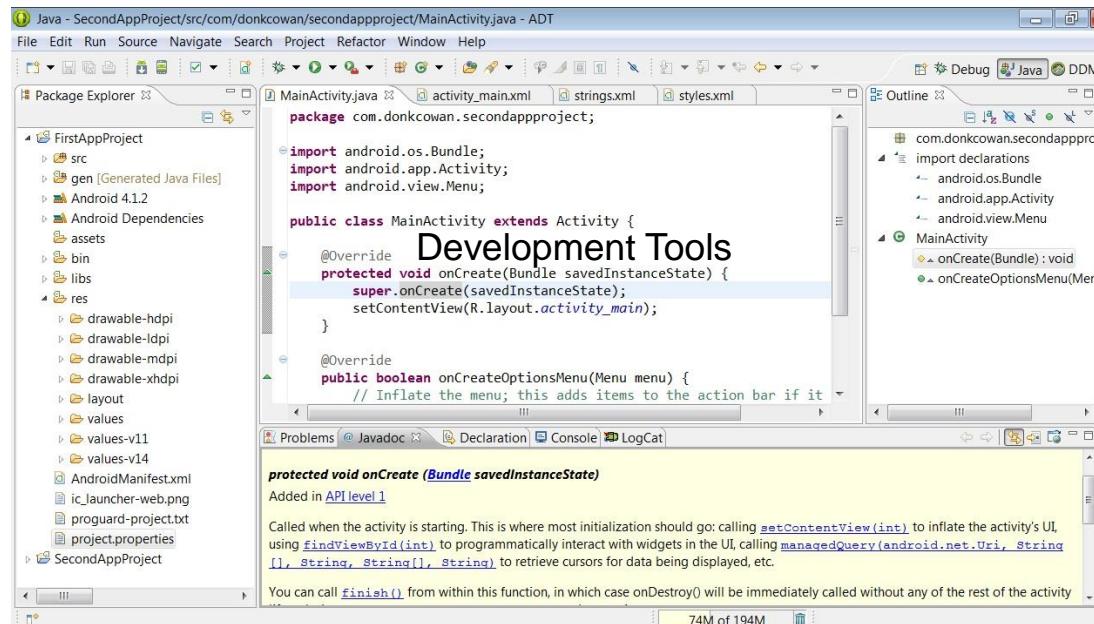
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Sample Code

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Applications



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File Edit Run Source Navigate Project Refactor Window Help

Package Explorer Main Activity.java activity_main.xml strings.xml styles.xml

```
package com.donkcowan.secondappproject;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;

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
        // available.
        getMenuInflater().inflate(R.menu.main, menu);
        return true;
    }
}
```

Development Tools

protected void onCreate (Bundle savedInstanceState)

Added in API level 1

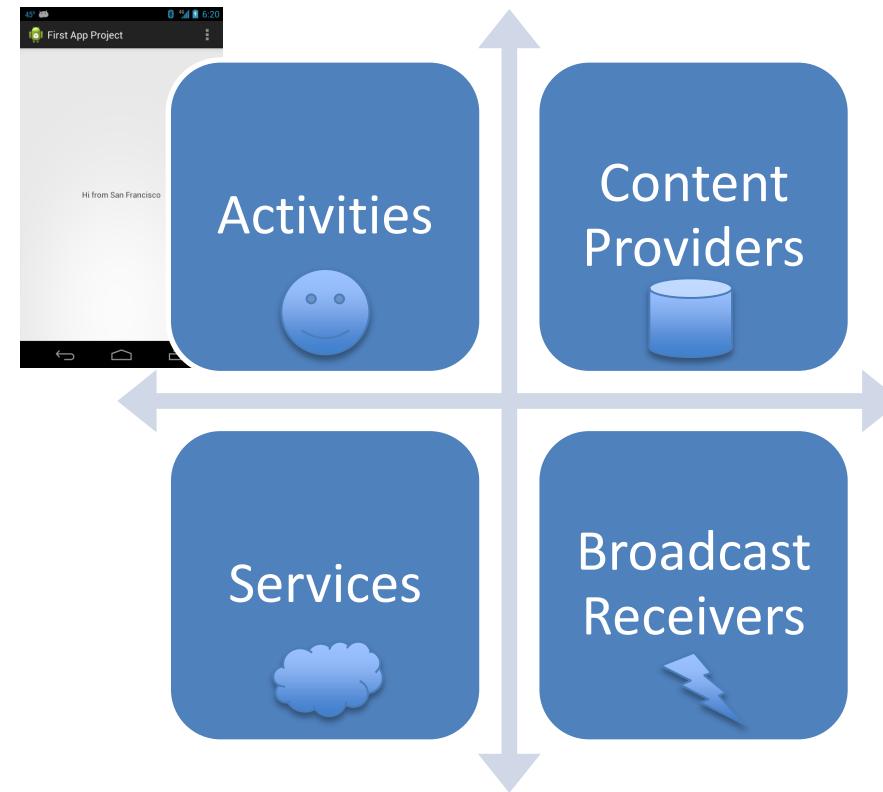
Called when the activity is starting. This is where most initialization should go: calling `setContentView(int)` to inflate the activity's UI, using `findViewById(int)` to programmatically interact with widgets in the UI, calling `managedQuery(android.net.Uri, String[], String[], String[])` to retrieve cursors for data being displayed, etc.

You can call `finish()` from within this function, in which case `onDestroy()` will be immediately called without any of the rest of the activity

74M of 194M

Virtual Devices · Real Smartphones/Tablets

Android App Components



Each type of app component has its own...

- Entry Points
- Purpose
- Life Cycle

<http://developer.android.com/guide/components/fundamentals.html#Components>

Building Android Apps Using Wizards

Resources

- XML
- Images



APIs

- Classes
- Methods



Project Source Patterns

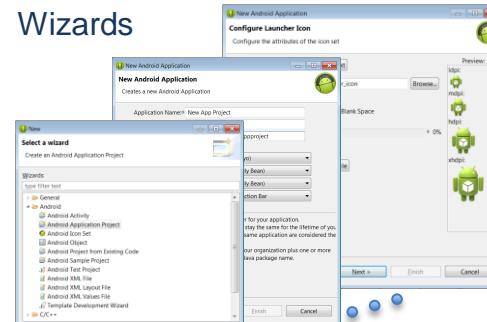
- Application Structures
- Existing Code
- Sample Apps
- Tests

Components

- Activities
- Content Providers
- Services
- Broadcast Receivers

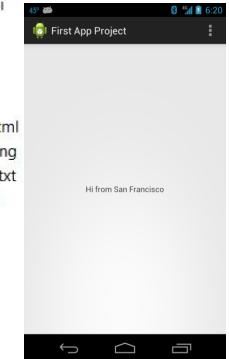


Wizards



**Eclipse/
Android Tools**

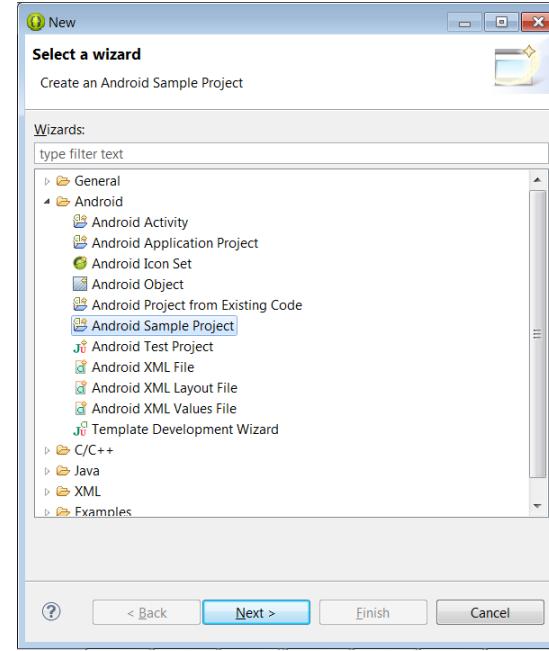
Workspace



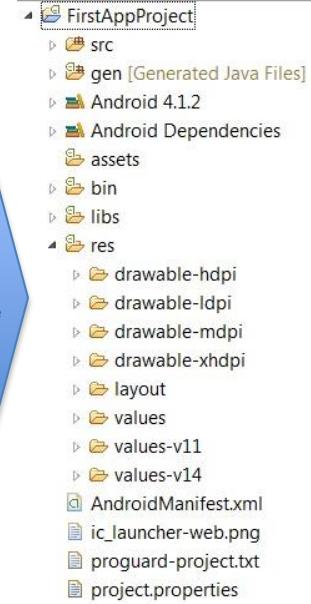
Hi from San Francisco

Using Android Wizards

File > New > Other for adding to a workspace
Right Click on Project > New > Other for adding to a project



Workspace

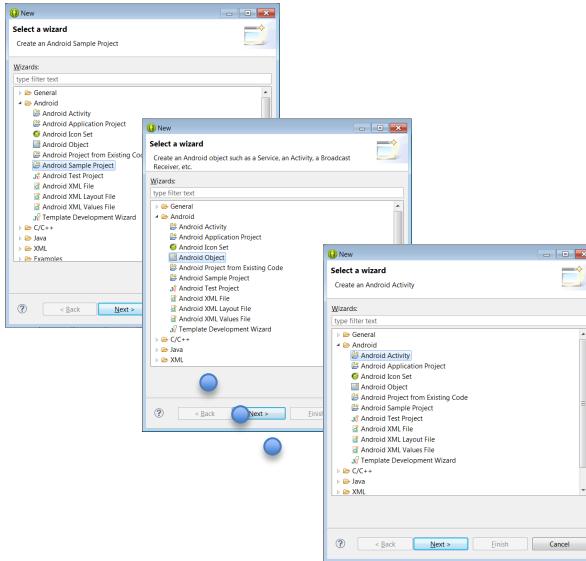


Wizard
Screen
Sequence

Using Code Templates: <http://developer.android.com/tools/projects/templates.html>

Using Android Wizards During App Development

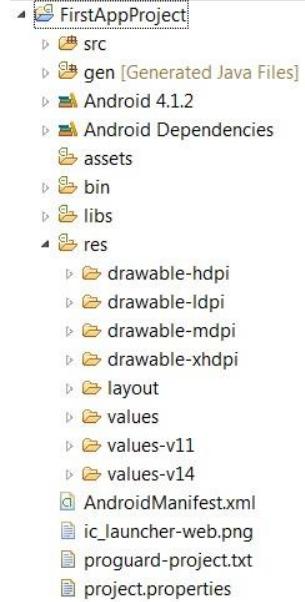
Wizards



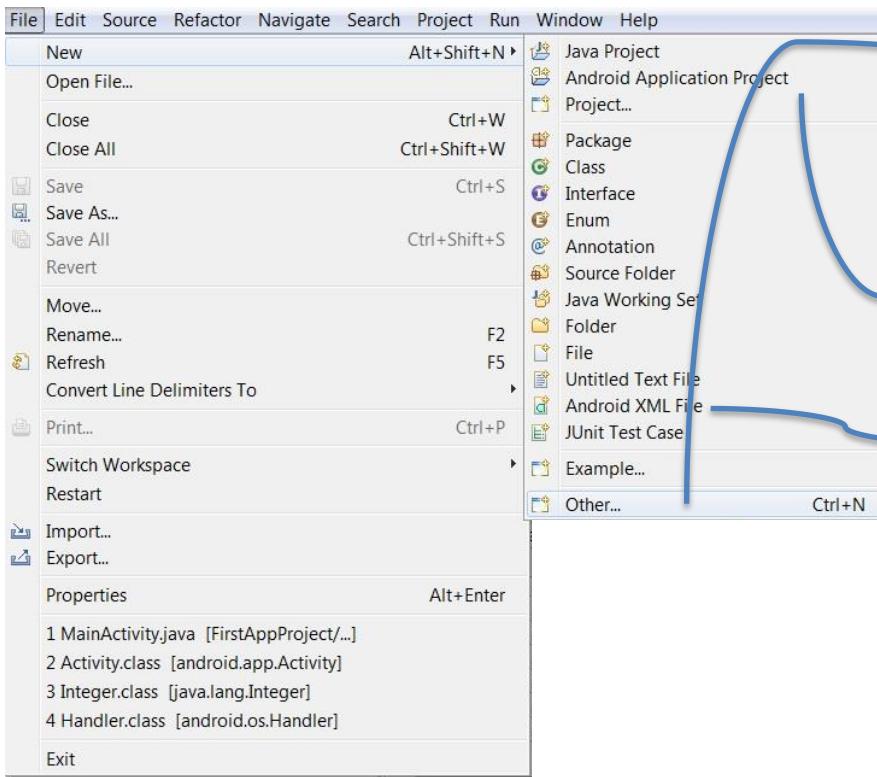
Eclipse/ Android Tools



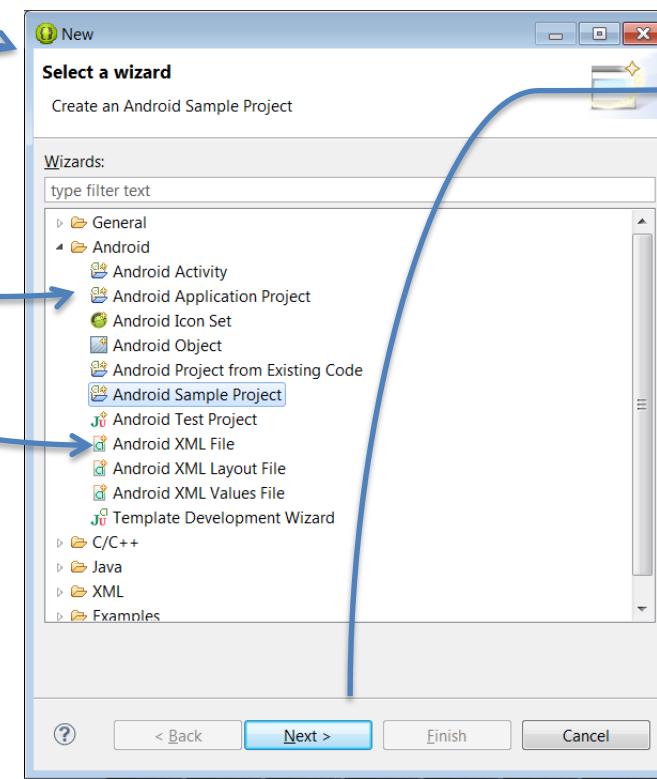
Workspace



File > New > Other for adding to a workspace
 Right Click on Project > New > Other for adding to a project



Android Wizard Access



Additional screens depending on type of wizard

Wizard Generated Android Activities



The image displays three sequential screenshots of the Eclipse IDE interface, illustrating the process of creating a new Android Activity.

Window 1: Select a wizard
Title bar: New
Content: "Select a wizard" and "Create an Android Activity".
Left sidebar: Wizards section with "Android Activity" selected.
Buttons at bottom: ? < Back, Next >, Finish, Cancel.

Window 2: Create Activity
Title bar: New Activity
Content: "Create Activity" and "Select which template to use".
List of templates:

- BlankActivity
- FullscreenActivity
- LoginActivity
- MasterDetailFlow
- SettingsActivity

Description: "New Blank Activity" and "Creates a new blank activity, with optional inner navigation."
Buttons at bottom: ? < Back, Next >, Finish, Cancel.

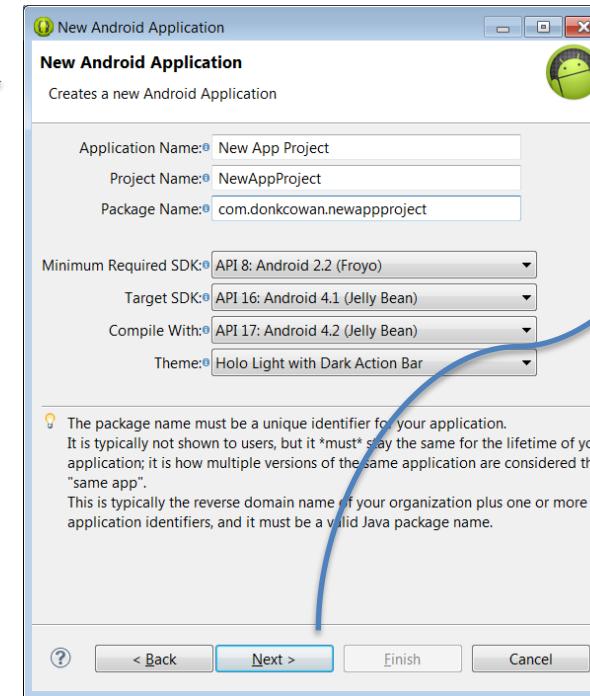
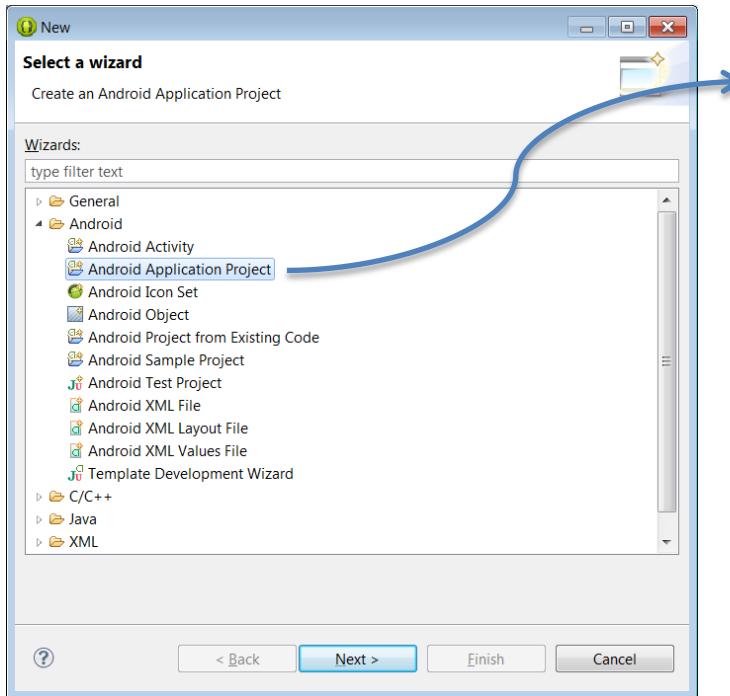
Window 3: New Blank Activity
Title bar: New Activity
Content:

- Project: FirstAppProject
- Activity Name: SecondActivity
- Layout Name: activity_second
- Title: SecondActivity
- Launcher Activity
- Hierarchical Parent: Optional
- Navigation Type: None

The "Activity Name" field is highlighted with a blue border.

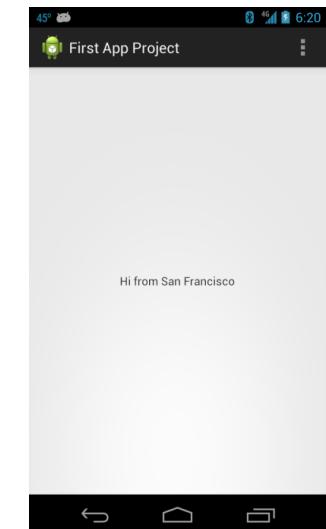
Description: "The name of the activity class to create".
Buttons at bottom: ? < Back, Next >, Finish, Cancel.

Wizard Generated Android Application Projects

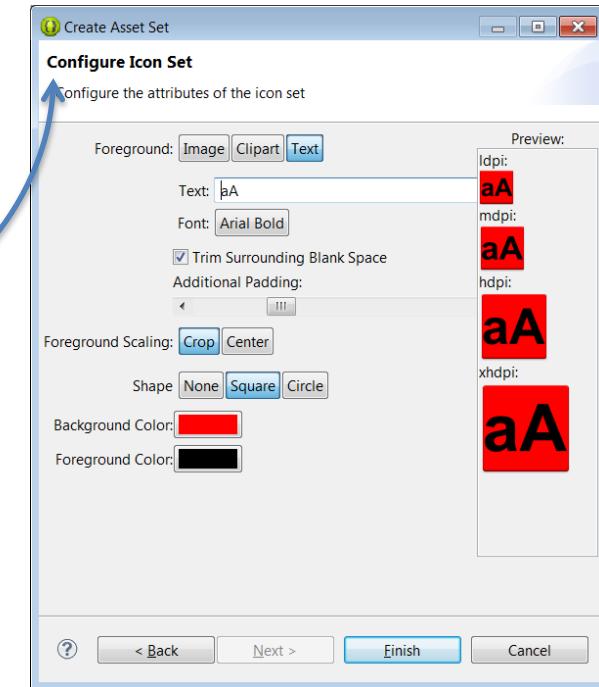
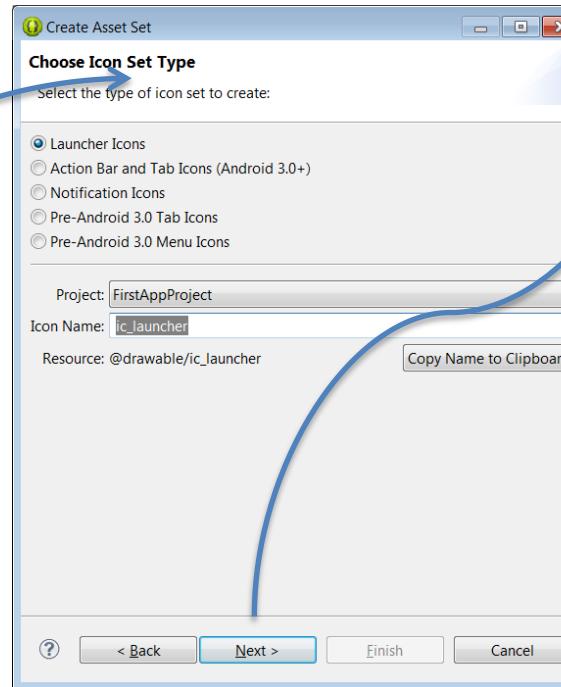
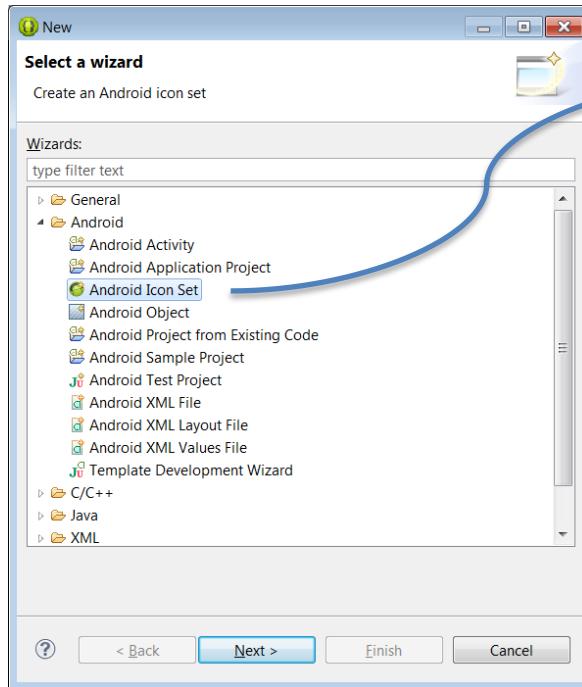


Additional Definition Screens

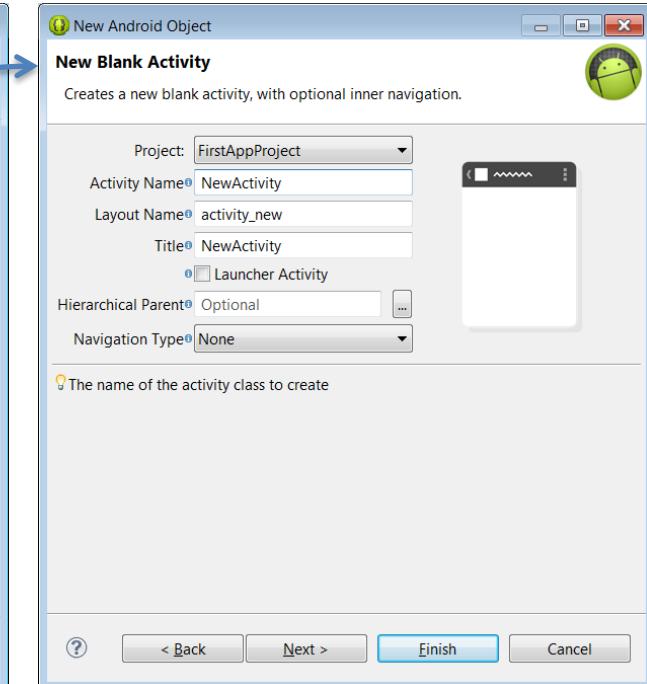
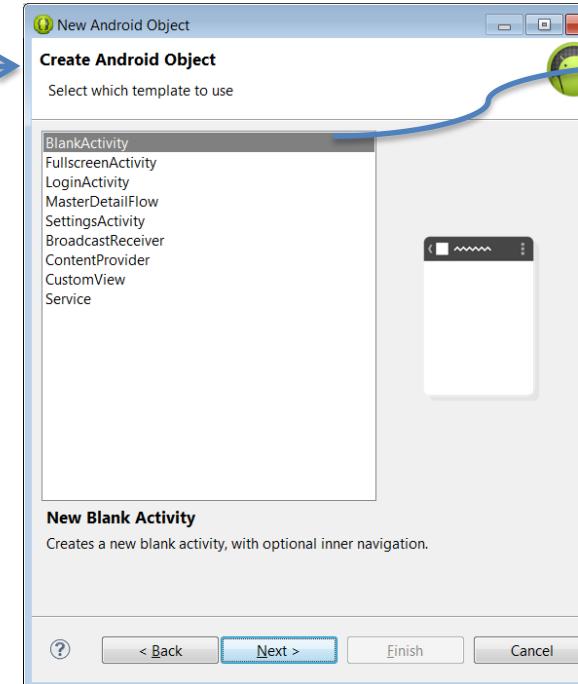
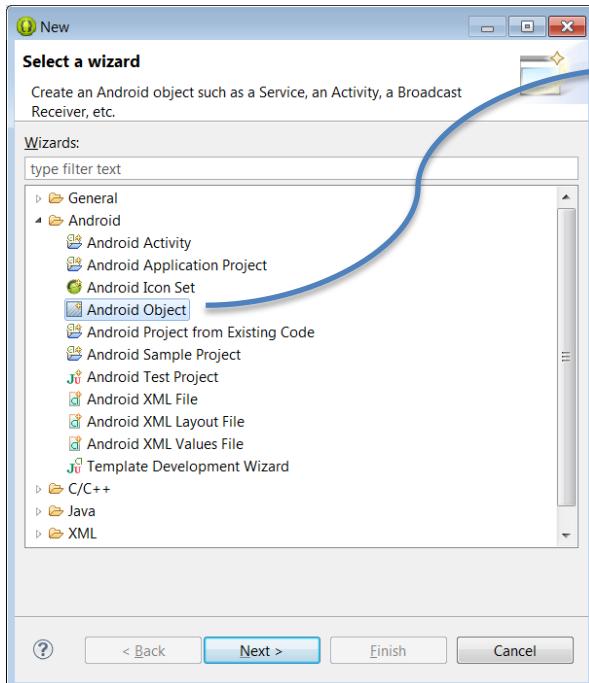
Used to create our First App Project



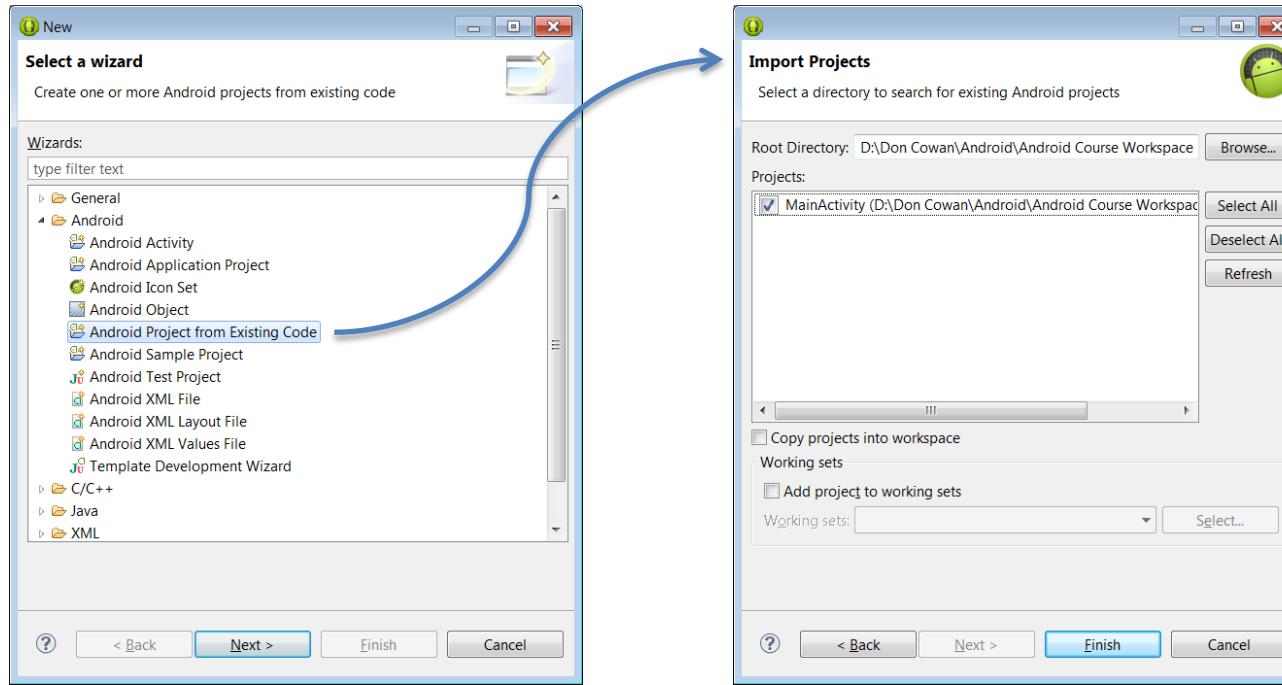
Wizard Generated Android Icon Sets



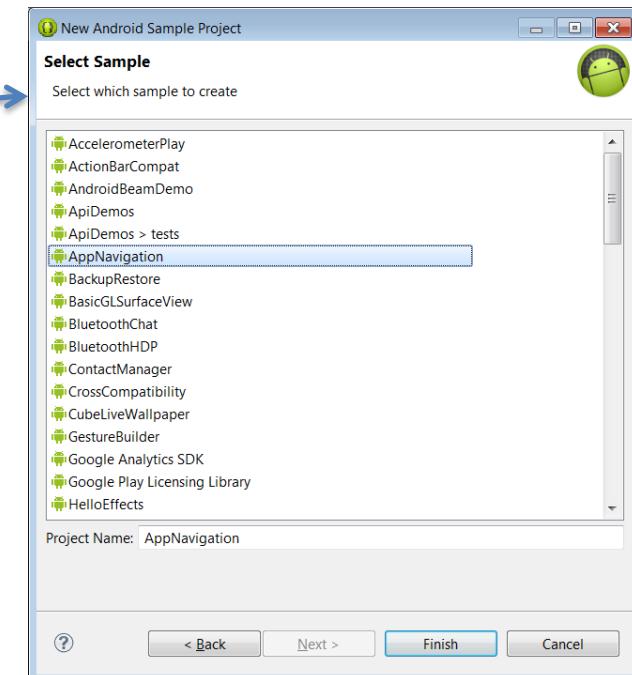
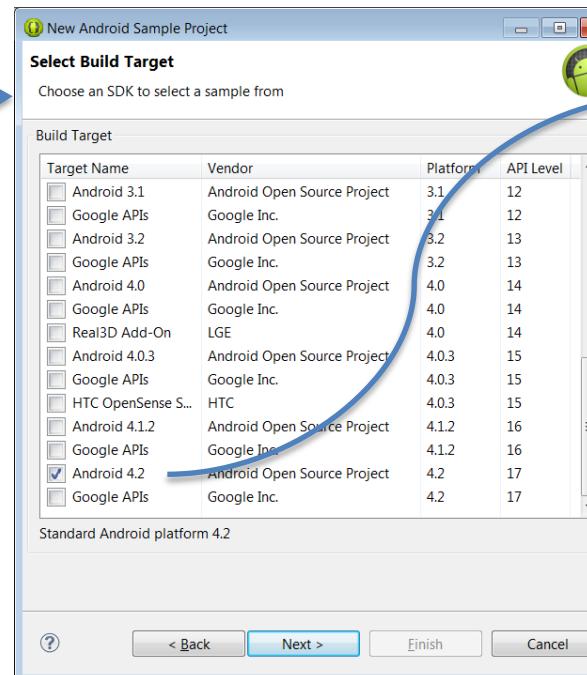
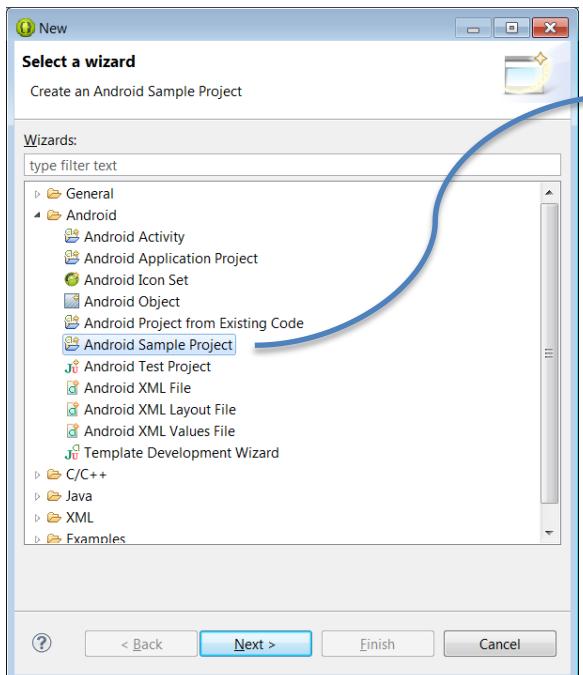
Wizard Generated Android Objects



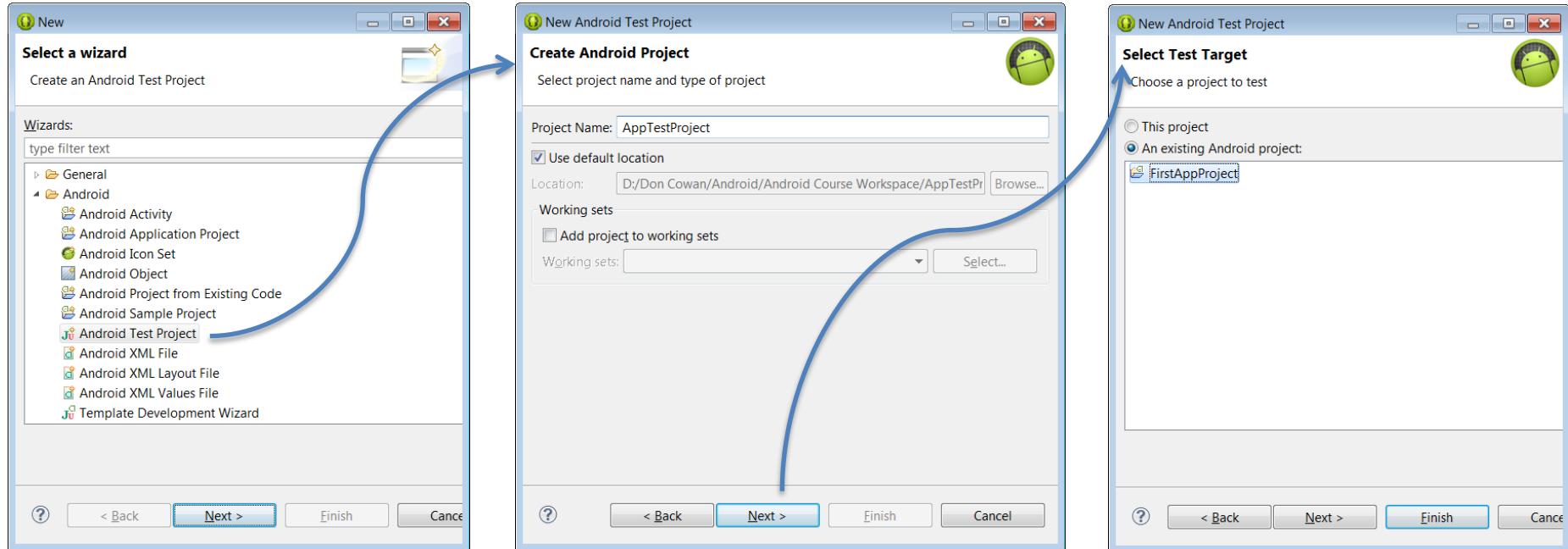
Wizard Generated Android Project from Existing Code



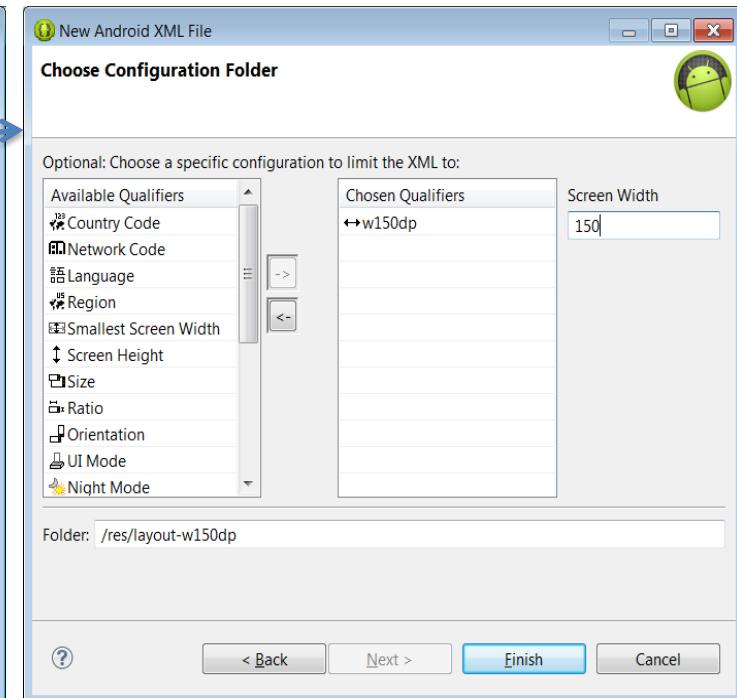
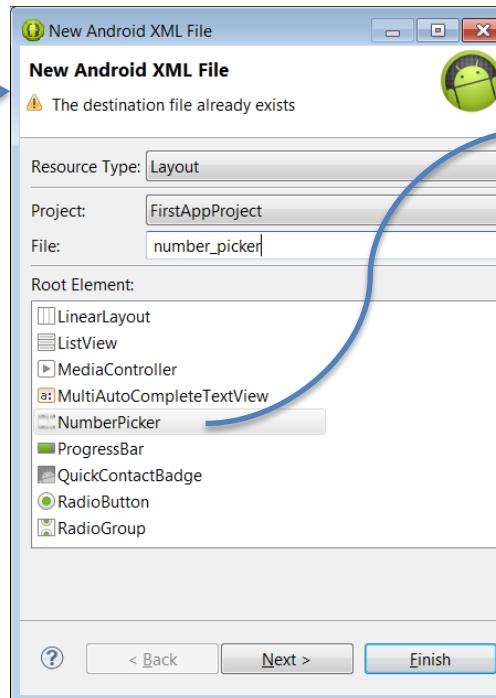
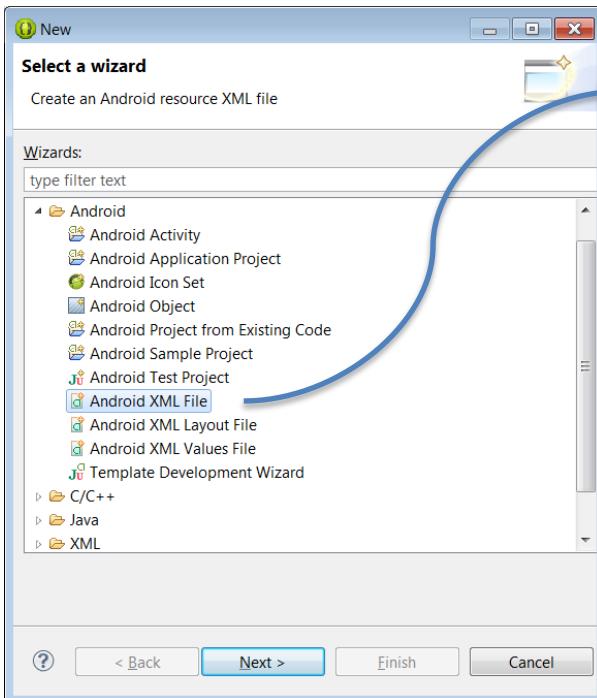
Wizard Generated Projects from Sample Apps



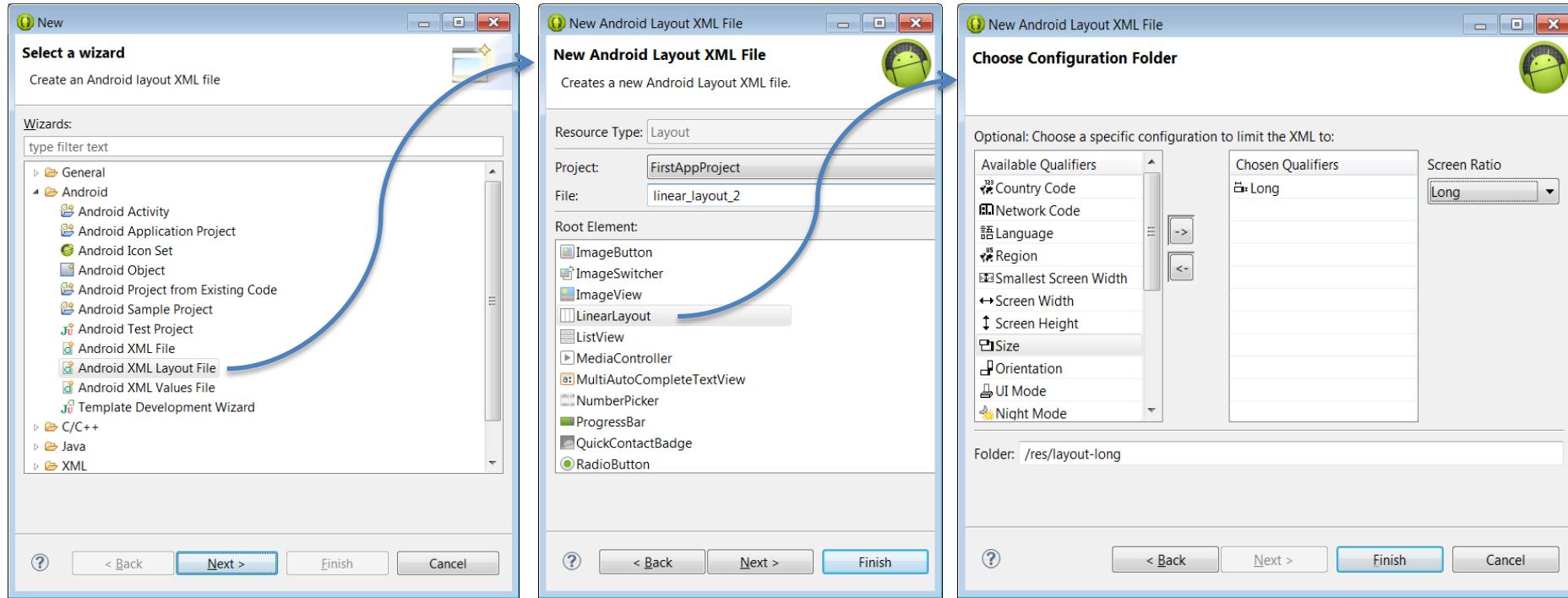
Wizard Generated Android Test Projects



Wizard Generated XML Files



Wizard Generated XML Layout Files



The image displays three sequential screenshots of the "New" wizard in an IDE, specifically for creating an Android Layout XML file.

Screenshot 1: Select a wizard
Title: "Select a wizard". Subtitle: "Create an Android layout XML file".
Wizards list:

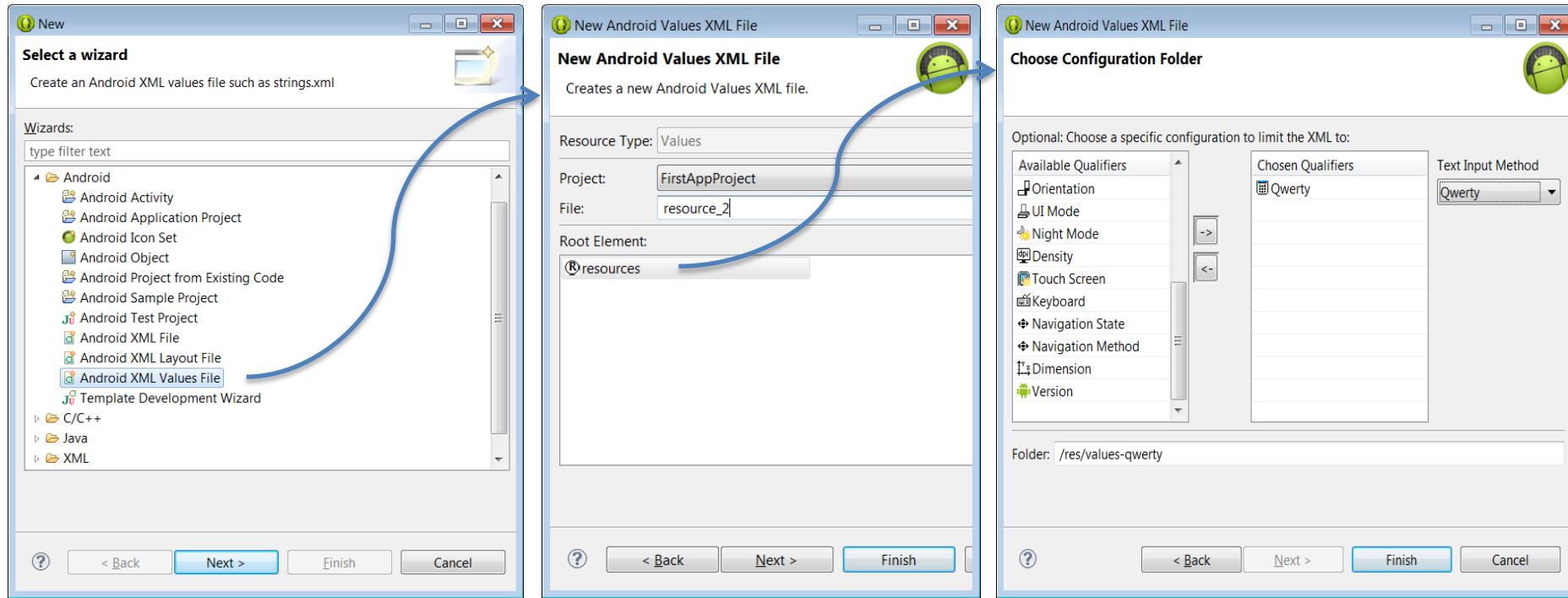
- General
- Android
 - Android Activity
 - Android Application Project
 - Android Icon Set
 - Android Object
 - Android Project from Existing Code
 - Android Sample Project
 - Android Test Project
 - Android XML File
 - Android XML Layout File
 - Android XML Values File
 - Template Development Wizard
- C/C++
- Java
- XML

Screenshot 2: New Android Layout XML File
Title: "New Android Layout XML File". Subtitle: "Creates a new Android Layout XML file."
Resource Type: Layout
Project: FirstAppProject
File: linear_layout_2
Root Element: **LinearLayout** (highlighted)
Available Qualifiers:

- Country Code
- Network Code
- Language
- Region
- Smallest Screen Width
- Screen Width
- Screen Height
- Size
- Orientation
- UI Mode
- Night Mode

Screenshot 3: Choose Configuration Folder
Title: "Choose Configuration Folder". Subtitle: "Optional: Choose a specific configuration to limit the XML to:"
Available Qualifiers (list same as Screenshot 2)
Chosen Qualifiers: Long
Screen Ratio: Long

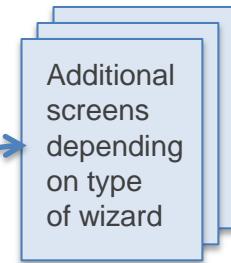
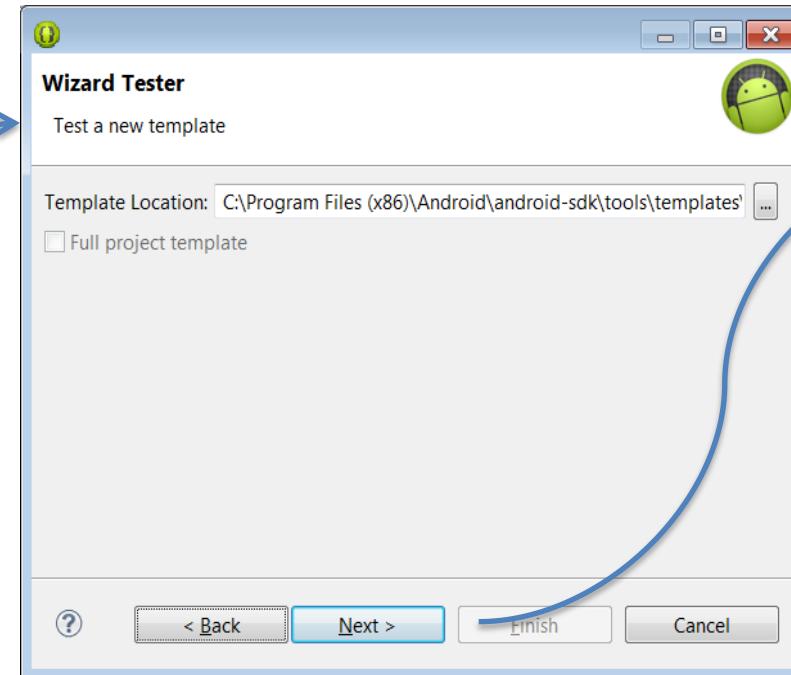
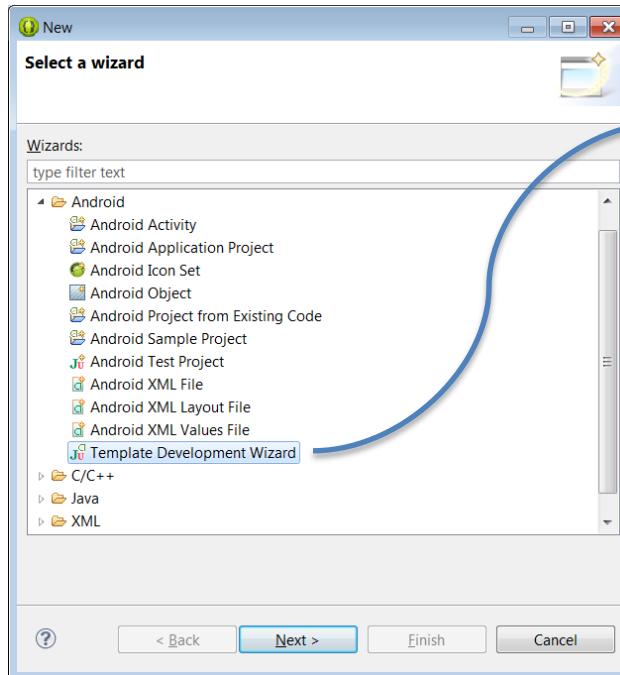
Wizard Generated XML Values Files



The image shows three sequential screens from an Android Studio wizard for creating an XML Values file:

- Select a wizard:** A window titled "Select a wizard" with the sub-instruction "Create an Android XML values file such as strings.xml". It lists several "Wizards" under the "Android" category, including "Android Activity", "Android Application Project", and "Android XML Values File". The "Android XML Values File" option is highlighted with a blue arrow.
- New Android Values XML File:** A window titled "New Android Values XML File" with the sub-instruction "Creates a new Android Values XML file.". It shows fields for "Resource Type: Values", "Project: FirstAppProject", "File: resource_2", and "Root Element: @resources".
- Choose Configuration Folder:** A window titled "Choose Configuration Folder" with the sub-instruction "Optional: Choose a specific configuration to limit the XML to:". It displays "Available Qualifiers" (Orientation, UI Mode, Night Mode, Density, Touch Screen, Keyboard, Navigation State, Navigation Method, Dimension, Version) and "Chosen Qualifiers" (Qwerty). The "Text Input Method" dropdown is set to "Qwerty".

Wizard Generated Templates Development



Building Android Apps Using Wizards

Resources

- XML
- Images



APIs

- Classes
- Methods

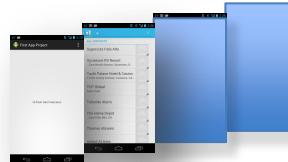


Project Source Patterns

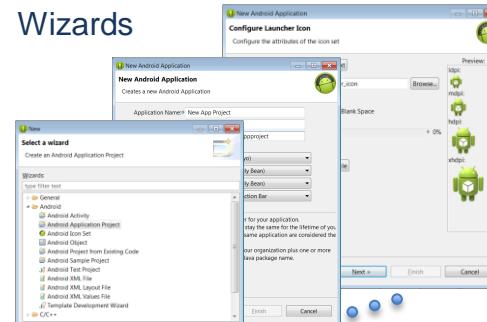
- Application Structures
- Existing Code
- Sample Apps
- Tests

Components

- Activities
- Content Providers
- Services
- Broadcast Receivers

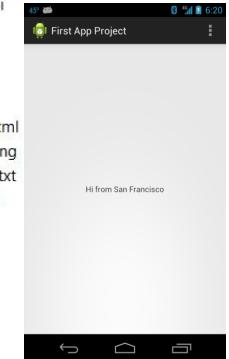


Wizards



**Eclipse/
Android Tools**

Workspace



Hi from San Francisco

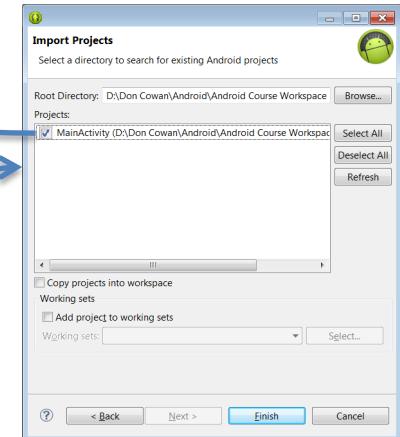
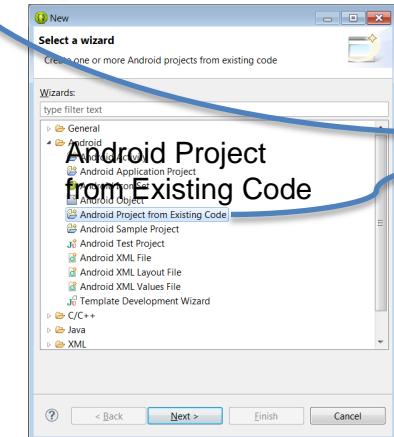
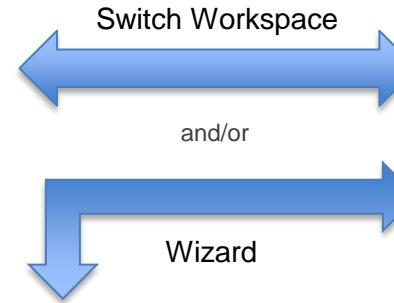
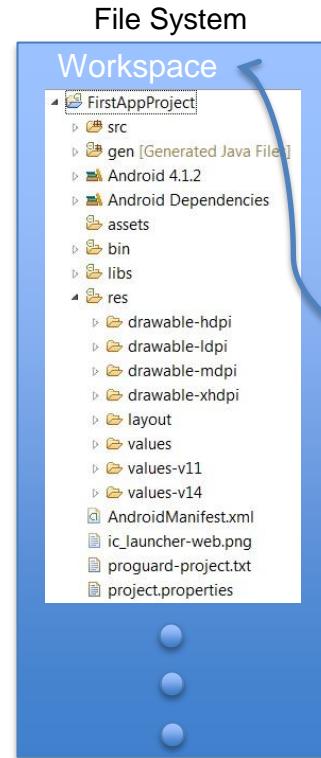
Using the Infinite Skills Samples



Download



Unzip



Android Native Development Kit (NDK)

[http://developer.android.com
/tools/sdk/ndk/index.html](http://developer.android.com/tools/sdk/ndk/index.html)

- Alternative to the SDK for **limited circumstances**
- Use the NDK **only when essential**
- Allows using **C/C++** code and code libraries
- Useful for **porting** existing C/C++ code to Android
- Useful for developing **processing intensive apps** such as signal processing and simulation
- NDK **won't benefit most apps**
- Google **recommends against** using the NDK unless it is considered essential for the app
- Using the NDK will result in more **complex and costly** development than using the SDK
- Using the NDK will usually result in only **minor performance improvements** over the SDK

Java vs. C++

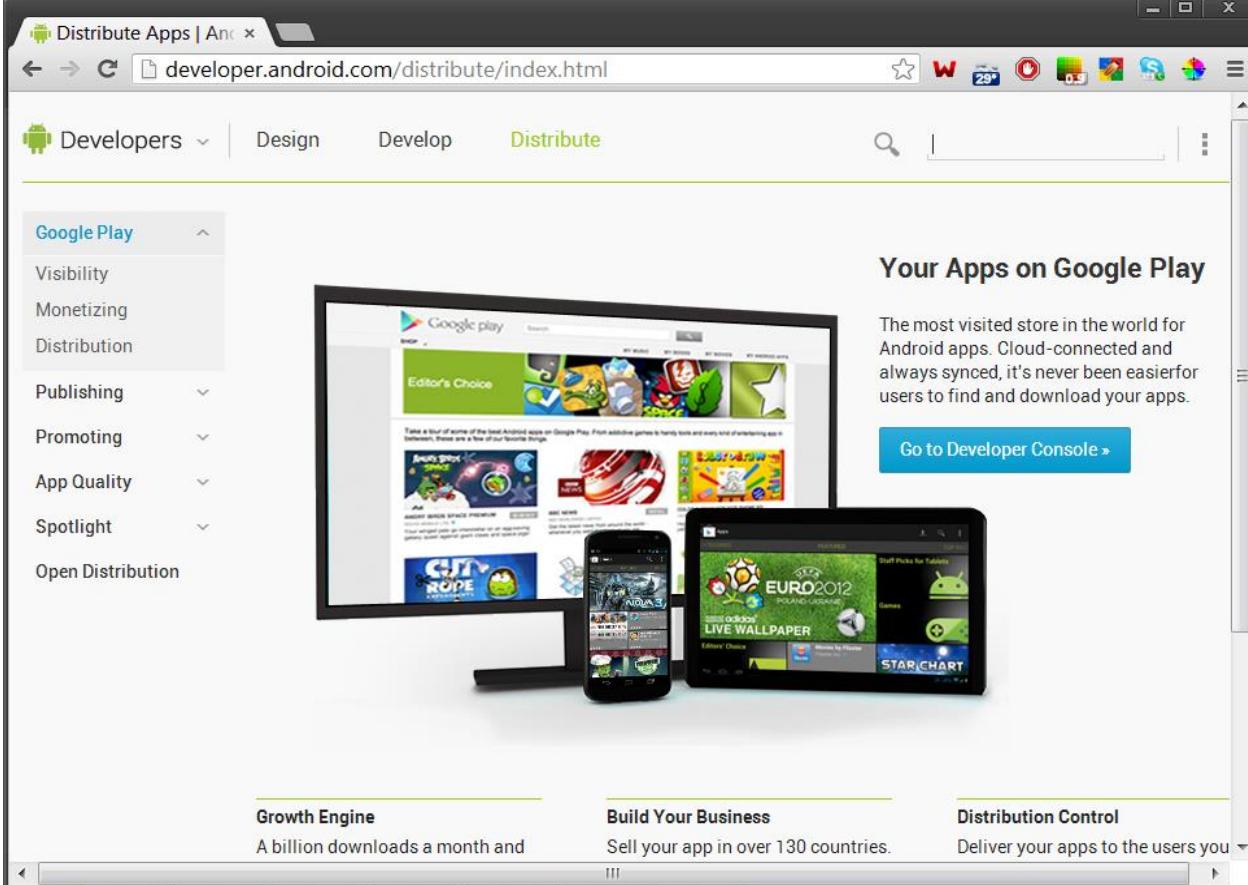
ASPECT	JAVA	C++
Array Automatic Index Limits	yes	no
Automatic Variable Initialization	yes	no
Boolean Data Type Primitive	yes	no
Characters	16-bit unicode	8-bit ASCII
Code Execution	slower	faster
Comma Operator	no	yes
Complexity	less	more
Const Reference Parameters	no	yes
Functions All Part of a Class	yes	no
Garbage Collection Automation	yes	no
Global Variables	no	yes
Goto Statements	no	yes
Inheritance	single	multiple
Library Reference	#include	import
Low Level Access	no	yes
Main Method Value Return	no	yes
Mask Identifiers Through Scope	no	yes
Memory Location Manipulation	no	yes
Methods Virtually Bound	all except final	only virtual functions
Multithreading	yes	no
Names Access	import	namespace
Network & Web Focused	yes	no
Object Definition	Foo f = new Foo()	f = new Foo
OOP Enforcement	yes	no
Operator Overloading	no	yes
Parameter Lists	fixed length	variable length
Parameter Passing by Reference	no	yes
Pointers	no	yes
Portability	high	low
Preprocessor	no	yes
Standard Output Example	System.out.println("H")	cout << "H"
String Representation	objects	character arrays
Typedef	no	yes
Unchangeable Variable Specification	final	const
Virtual Machine Use	yes	no
Write Once Run Anywhere	yes	no

Google Play for Developers

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

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The screenshot shows a web browser window with the URL developer.android.com/distribute/index.html. The page is titled "Distribute Apps | Android Developers". The navigation bar includes links for "Developers", "Design", "Develop", and "Distribute". A sidebar on the left lists categories: "Google Play" (selected), "Visibility", "Monetizing", "Distribution", "Publishing", "Promoting", "App Quality", "Spotlight", and "Open Distribution". The main content area features a large image of a computer monitor, a smartphone, and a tablet displaying the Google Play store interface. To the right, a section titled "Your Apps on Google Play" describes it as "The most visited store in the world for Android apps. Cloud-connected and always synced, it's never been easier for users to find and download your apps." A blue button says "Go to Developer Console". At the bottom, there are three sections: "Growth Engine" (A billion downloads a month and...), "Build Your Business" (Sell your app in over 130 countries.), and "Distribution Control" (Deliver your apps to the users you...).

App Listing Key Elements

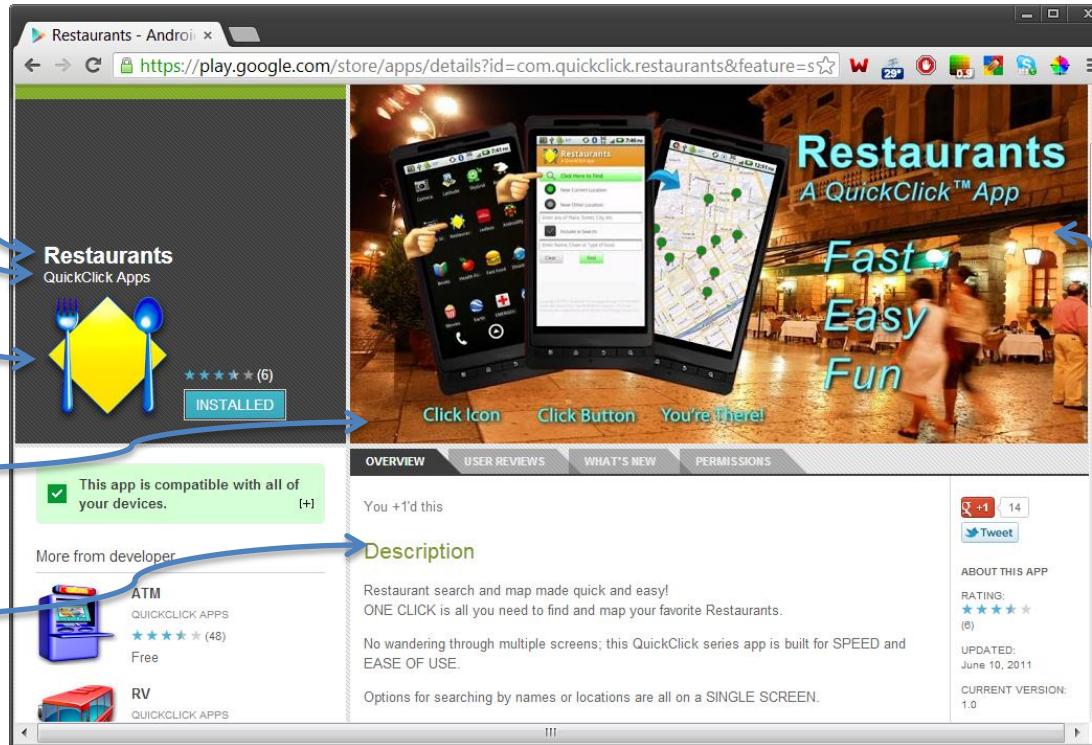
App Name

Publisher's Name

Icon

Graphic

Description



Consider using online professional sources, such as Getty Images, for illustrations and photographs:

<http://www.gettyimages.com/>

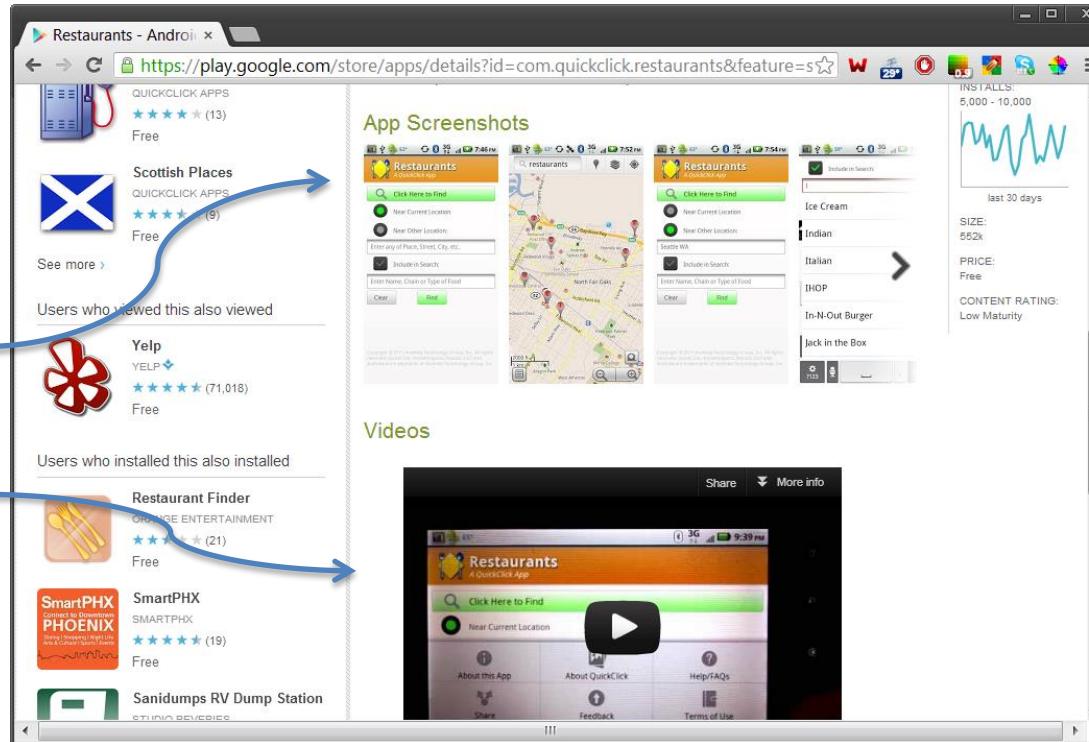
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App Listing Key Elements

Screen Shots

Video



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App Listing Key Elements



The screenshot shows the Google Play Store listing for the "ATM - QuickClick Apps" app. The top section features a large image of a smartphone displaying a map and a nearby ATM, with another hand pointing at the screen. Text overlays say "ATM", "A QuickClick™ App", "Fast", "Easy", and "Fun". Below this, a "WHAT'S NEW" section highlights compatibility with all devices. The bottom section shows "More from developer" with links to "RV" and "Restaurants" apps.

What's New

This app is compatible with all of your devices.

What's New

More from developer

RV
QUICKCLICK APPS
★ ★ ★ ★ (11)
Free

Restaurants
QUICKCLICK APPS

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Upload

dkowan



GUIDE NEW

This is your guide

Access your channel,
playlists, subscriptions,
and more.

Got it!



ANDROID MARKET SEARCH

Don Cowan
Director of Software Engineering,
marketimpacts.com

December 13, 2011
San Francisco, CA

00:03 / 33:39

CC

https://www.youtube.com/watch?feature=player_embedded&v=8KGkKYsqlR8

Android Market Search



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Recommended for you
- **07 - Android UI - Part 2: Android Bootcamp**
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by MarakanaTechTV
83,710 views
- **04 - Main Building Blocks: Android**
by MarakanaTechTV
22,734 views
- **Requested: Color Matching - Manipulation**
by Andrei Oprinca
Recommended for you
- **Android Bootcamp Series 2012**
by MarakanaTechTV

Android Market Analysis



The screenshot displays the Android Market interface. At the top, there are filters for Type (No filter, Apps, Music, Books), Price (No filter, Free, Paid), Safe Search (Off, Low, Moderate), Device Compatibility (No filter, Select a device), and Sort By (Relevance, Popularity). A search bar shows the query "coffee". Below the filters, a navigation bar includes "Groups", "Home", "Topics", and "Help". The main content area shows search results for "coffee" under the "APPS" category. The results include:

- Coffee Guide** by HenryHuang - Free, 4.5 stars, 1 download.
- My Coffee Card** by birbeck - Free, 4.5 stars, 1 download.
- Brain Cafe | GeoQuiz** by Urbian - Free, 4.5 stars, 1 download.
- My Coffee Card Pro** by birbeck - Free, 4.5 stars, 1 download.
- Coffee Fix** by BrennaSoft - Free, 4.5 stars, 1 download.
- 네이버 카페 - Naver Cafe** by NHN Corporation - Free, 4.5 stars, 1 download.
- Coffee Fix Pro** by BrennaSoft - \$1.49, 4.5 stars, 1 download.

A small inset window shows a forum topic titled "Google Product Forums" with 37,074 topics. Another inset shows a map application interface with various service icons like Gas Station, Convenience Store, and Car Wash.

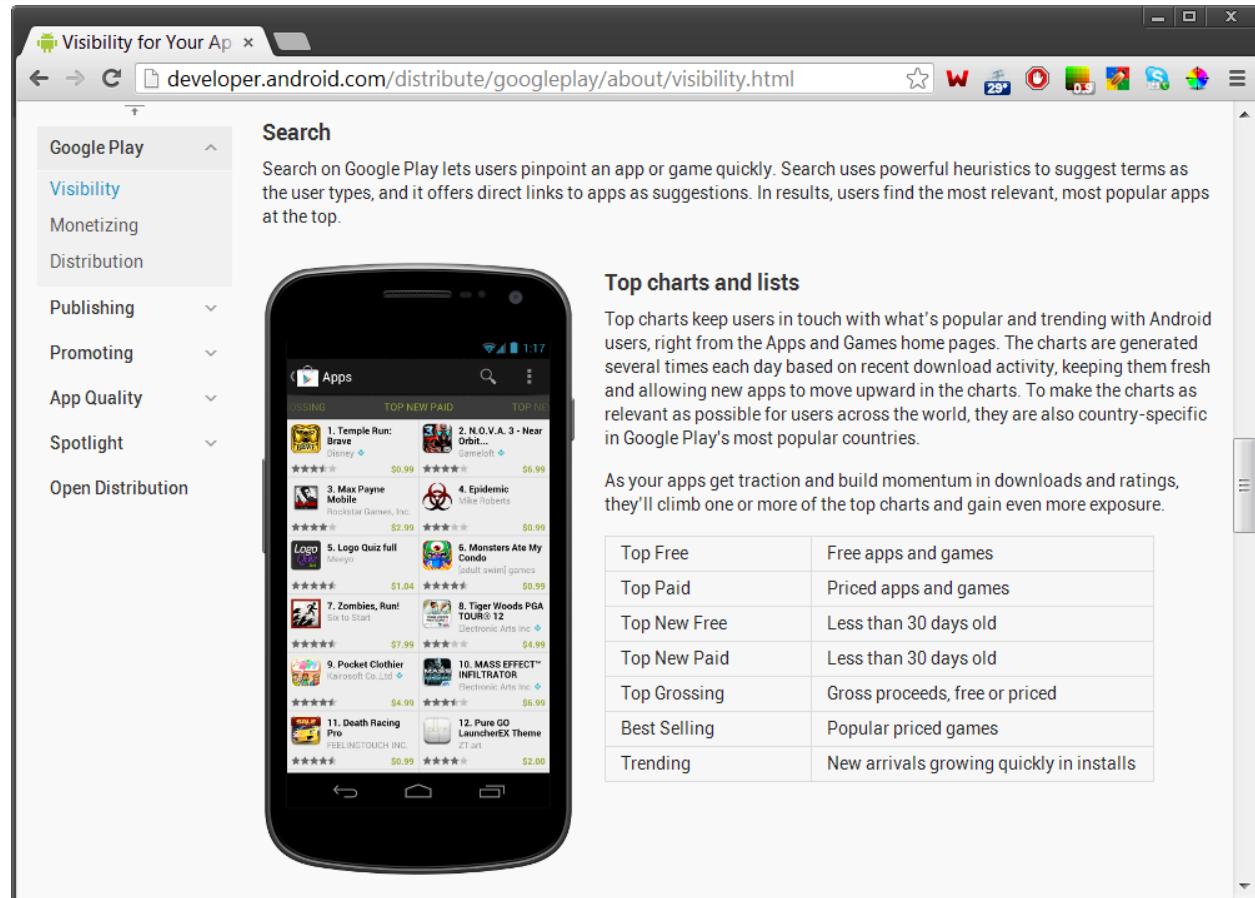
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Android App Visibility

<http://developer.android.com/distribute/googleplay/about/visibility.html>

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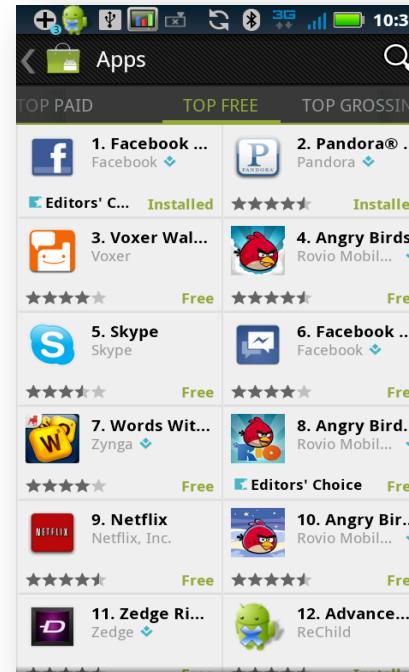


App Discovery

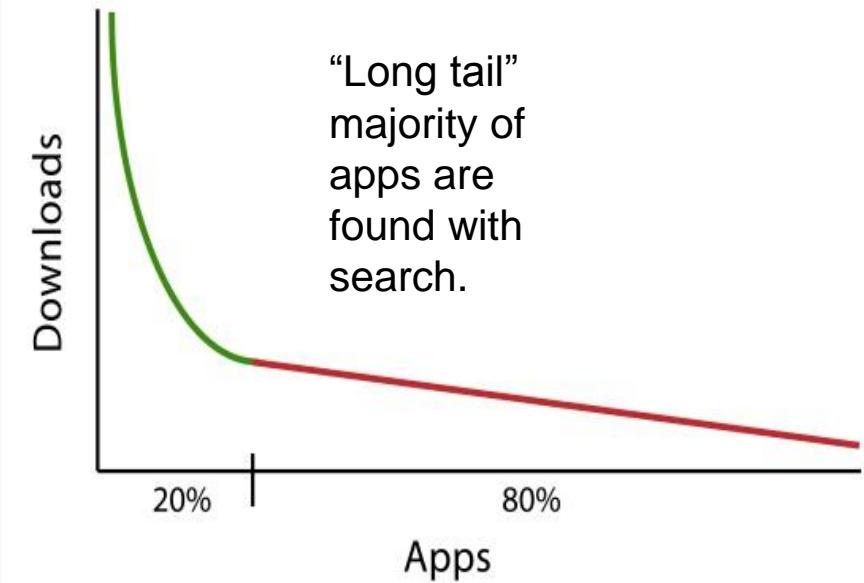
< 10,000 apps

Top apps
featured in
lists:

- Featured
- Editors Choice
- Top Paid
- Top Free
- Top Grossing
- Top New Paid
- Top New Free
- Top Developers



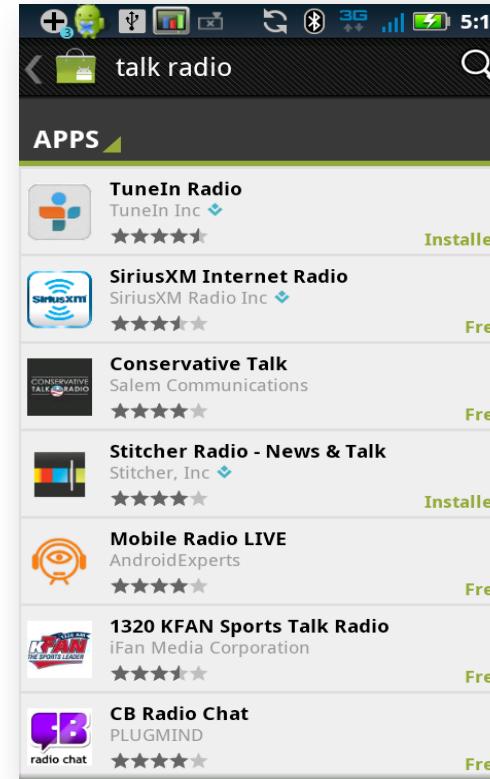
> 700,000 apps



“Long tail”
majority of
apps are
found with
search.

App Name Factors

- Search algorithm is **parsing** app names.
- Search term **spell correction**.
- Use **quotes** to find exact app name.
- Plays on words and **abstract names** may not be as effective as plain words for search.
- Add **plain key words** to abstract names.



Example:

Adding the keywords **Radio, News, Talk** to an abstract app name helped improve search ranking.

The Importance of Keywords

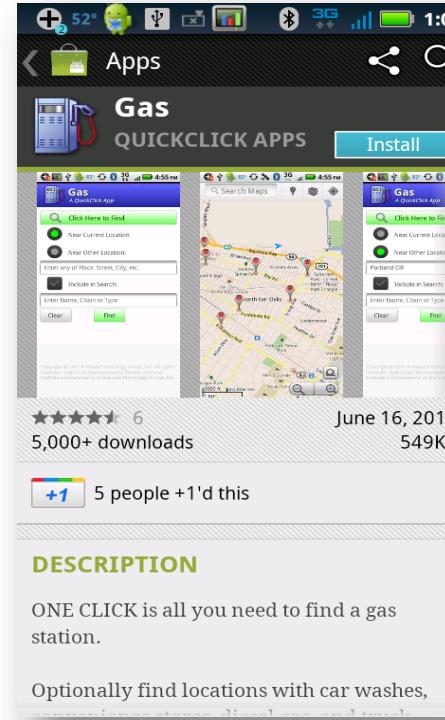
In app name.

Heavy weighting.

Need to enclose name searches in quotes to find exact matches.

In first paragraph of description.

Heavy weighting.



In search terms.

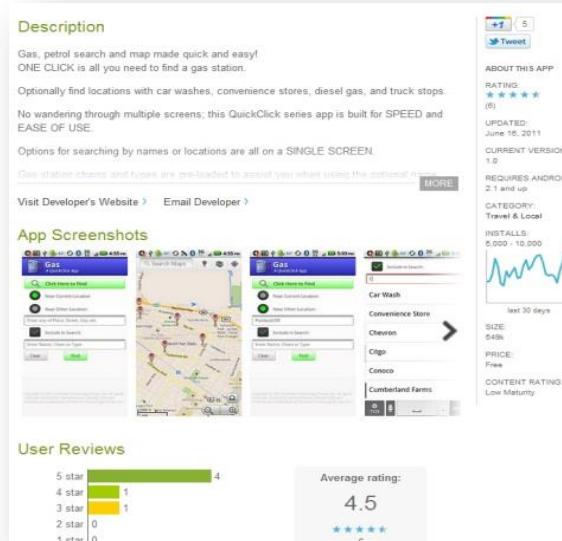
Search terms are parsed, spell corrected and analyzed for key words.

In main body of description.

Less emphasis here due to keyword spamming. There are now Google rules against keyword spamming.

Measure of App “Stickiness”

- Recent installs vs. uninstalls (or a proprietary formula like this.)
- Chart of installs in last 30 days included in the Google Play app pages.



Description

Gas, petrol search and map made quick and easy! ONE CLICK is all you need to find a gas station. Optionally find locations with car washes, convenience stores, diesel gas, and truck stops. No wandering through multiple screens; this QuickClick series app is built for SPEED and EASE OF USE. Options for searching by names or locations are all on a SINGLE SCREEN. Gas station chains and towns are pre-loaded to assist you when using the custom search function.

Visit Developer's Website > Email Developer >

App Screenshots

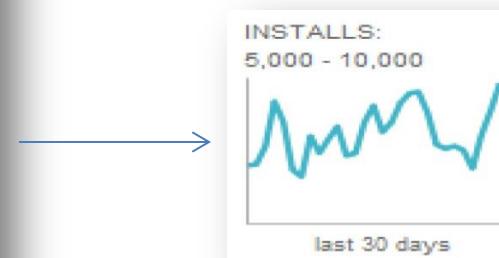


User Reviews

Star Rating	Count
5 star	4
4 star	1
3 star	1
2 star	0
1 star	0

Average rating: 4.5

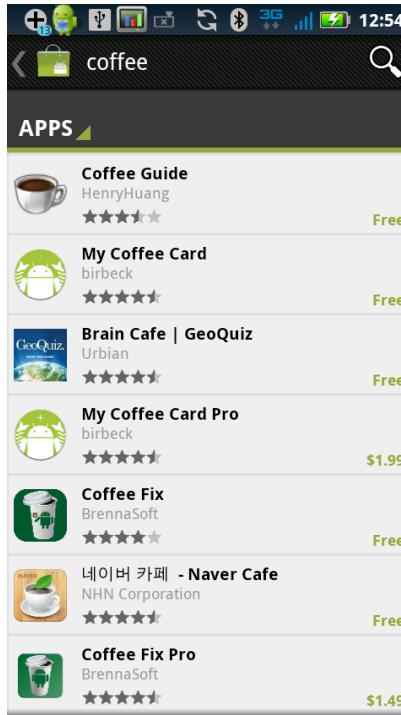
5 ★★★★☆
4 ★★★☆☆
3 ★★☆☆☆
2 ☆☆☆☆☆
1 ☆☆☆☆☆



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Search Results Example



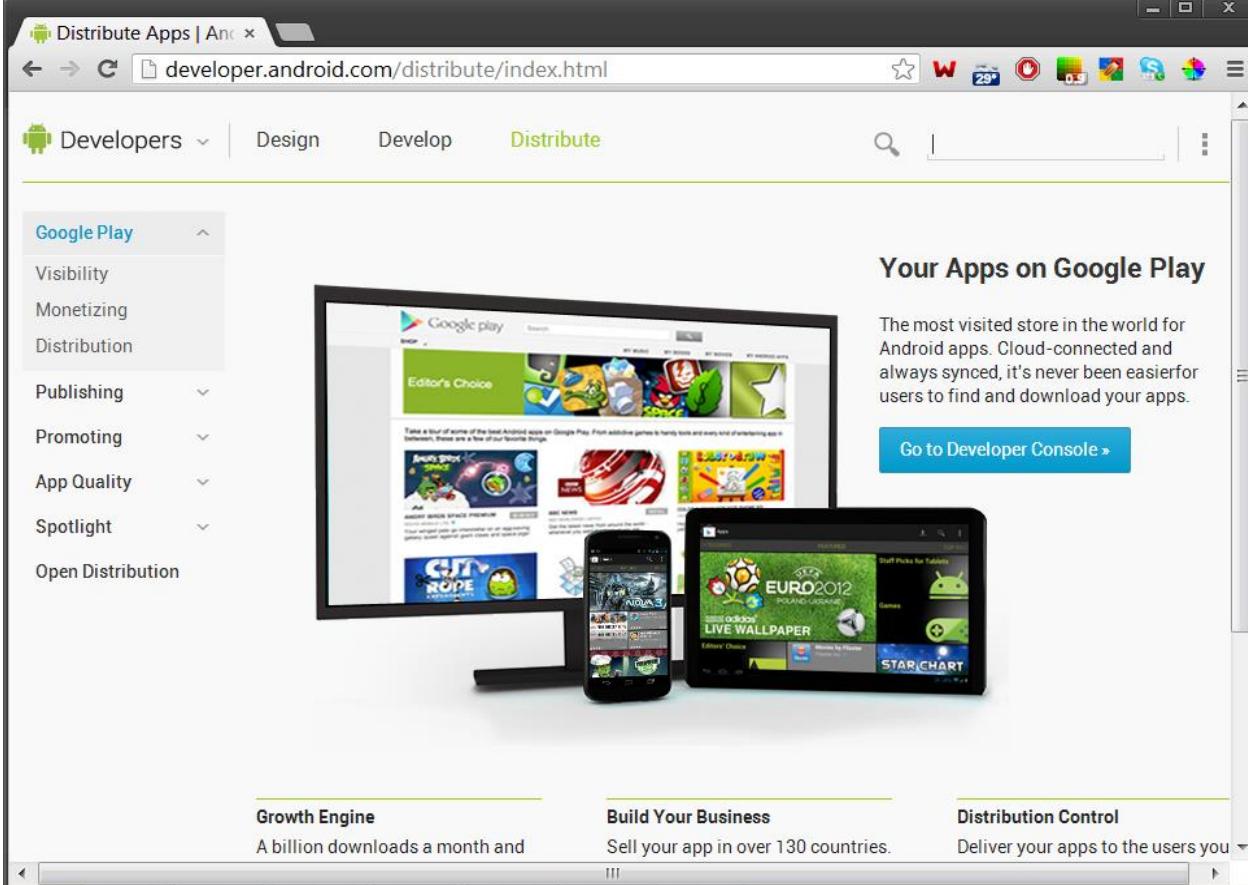
<u>Downloads</u>		<u>Rating</u>	<u>Possible Rank Factors</u>		
<u>Recent</u>	<u>Total</u>	<u>1 - 5</u>	<u>Recent</u>	<u>Total</u>	<u>Rating</u>
					<u>Name Paid</u>
	10,000+	3.7			
	100,000+	4.7			
	1,000,000+	4.3			
	10,000+	4.6			
	100,000+	4.0			
	100,000+	4.4			
	1,000+	4.3			

Google Play for Developers

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

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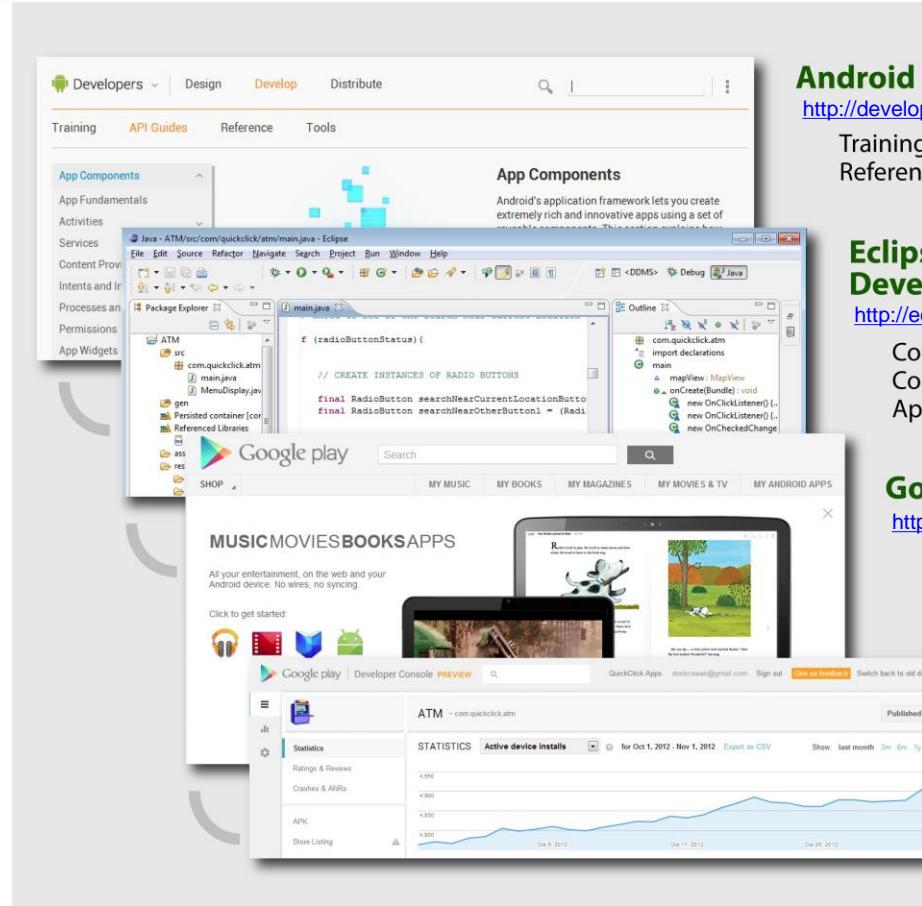
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The screenshot shows a web browser window with the URL developer.android.com/distribute/index.html. The page is titled "Distribute Apps | Android Developers". The navigation bar includes links for "Developers", "Design", "Develop", and "Distribute". A sidebar on the left lists categories: "Google Play" (selected), "Visibility", "Monetizing", "Distribution", "Publishing", "Promoting", "App Quality", "Spotlight", and "Open Distribution". The main content area features a large image of a computer monitor, a smartphone, and a tablet displaying the Google Play store interface. To the right, a section titled "Your Apps on Google Play" describes it as "The most visited store in the world for Android apps. Cloud-connected and always synced, it's never been easier for users to find and download your apps." A blue button says "Go to Developer Console". At the bottom, there are three sections: "Growth Engine" (A billion downloads a month and...), "Build Your Business" (Sell your app in over 130 countries.), and "Distribution Control" (Deliver your apps to the users you...).

Development System Overview

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Android Developers Website

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

Training API Guides Tools
Reference Code Samples Blog

Eclipse Integrated Development Environment

<http://eclipse.org/> (for download)

Code Development
Code Testing
App Packaging

Google Play

<https://play.google.com/store>

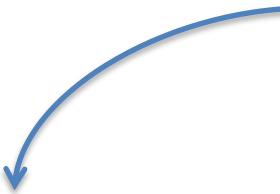
App Marketing
App Sales
App Downloads

Developer Console

<https://play.google.com/apps/publish/Home>

App Publishing
App Tracking
App Sales

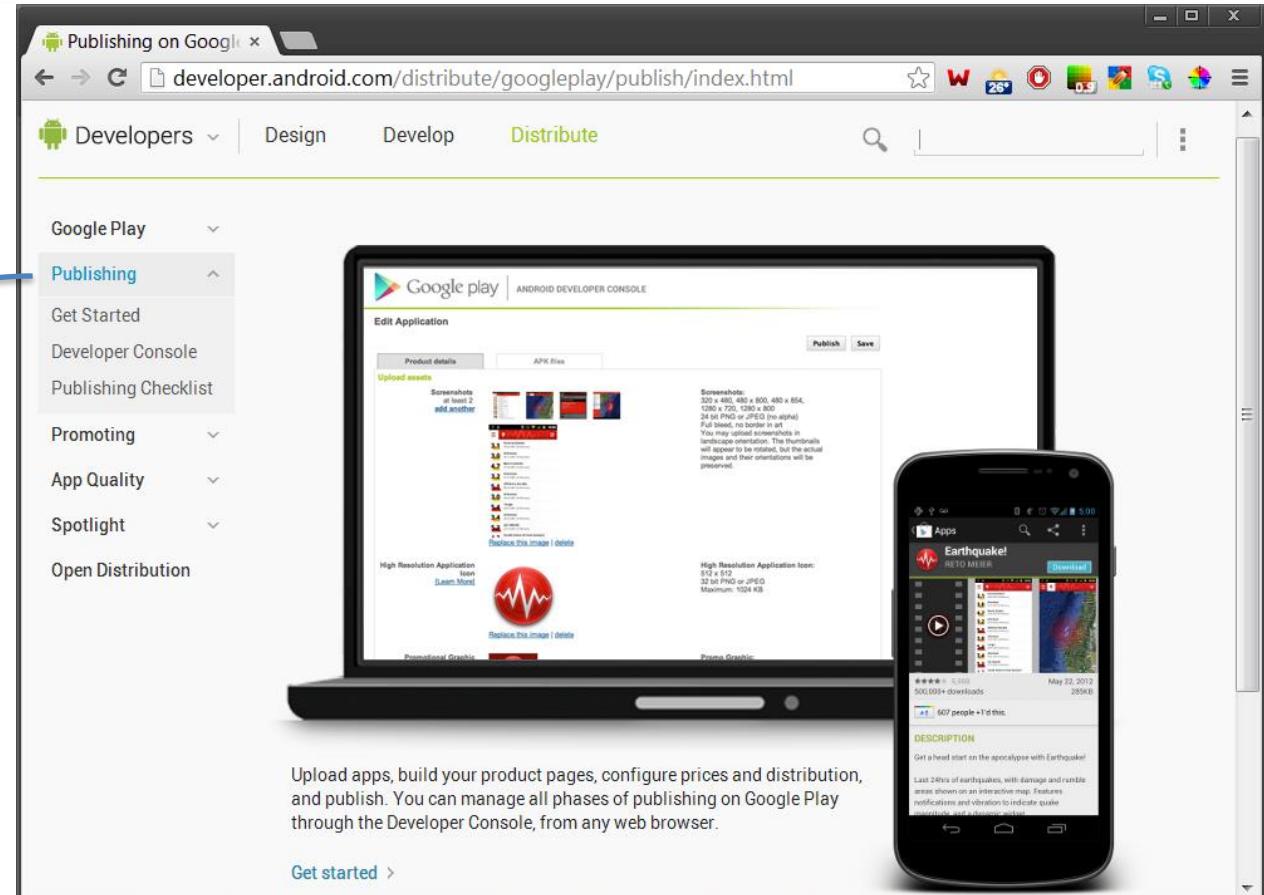
Publishing Apps to Google Play



<http://developer.android.com/distribute/googleplay/publish/index.html>

Register/Home at:

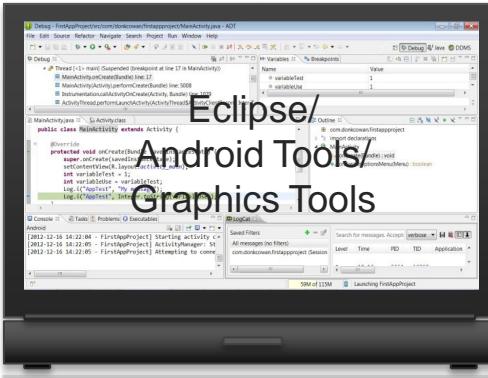
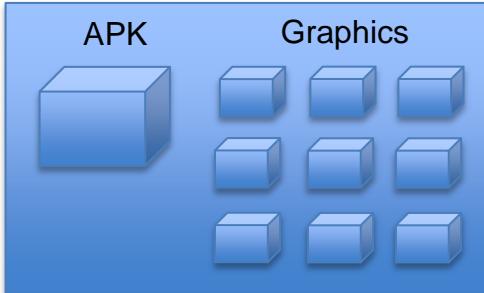
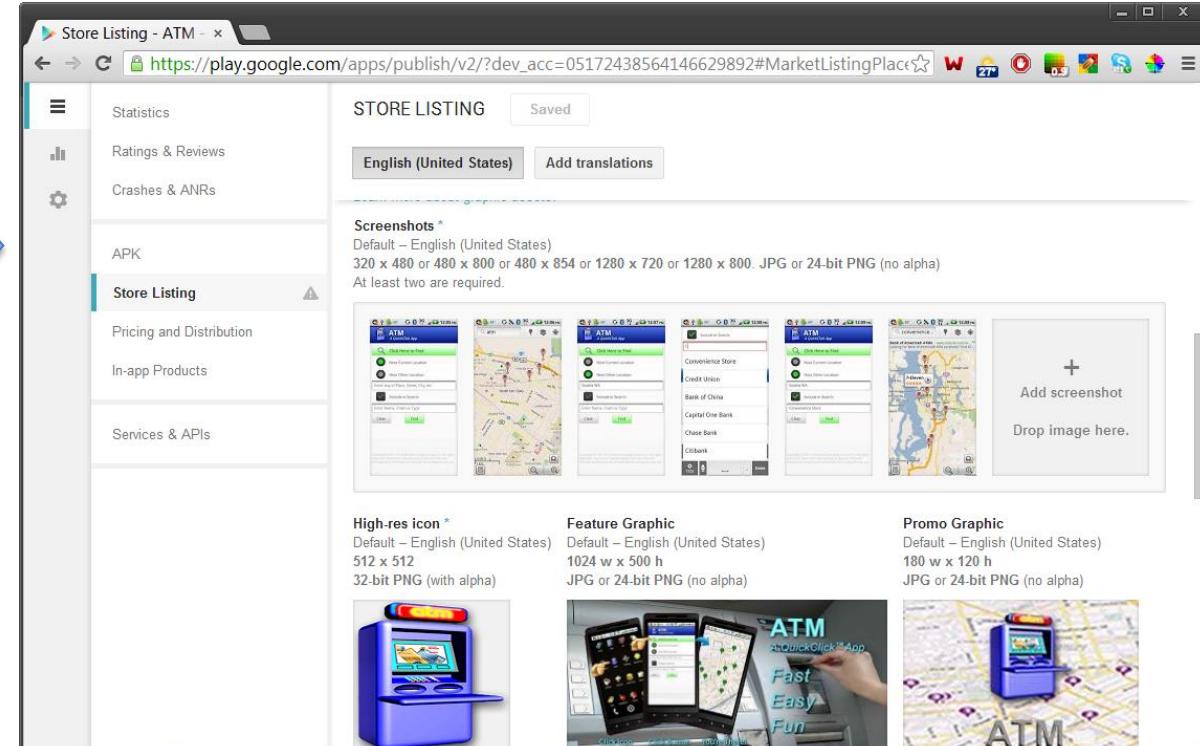
<https://play.google.com/apps/publish/Home>



The screenshot shows the Google Play Developer Console interface. The top navigation bar includes links for Developers, Design, Develop, and Distribute. The left sidebar has sections for Google Play (selected), Publishing (selected), Get Started, Developer Console, Publishing Checklist, Promoting, App Quality, Spotlight, and Open Distribution. The main content area is titled 'Edit Application' and shows the 'Product details' tab selected. It features sections for 'Uploaded assets' (Promotional Assets, High Resolution Application Icon, Promotional Graphic), 'Screenshots' (with orientation notes), and 'Reviews' (listing a 4.5-star rating from May 22, 2012). A large call-to-action button at the bottom says 'Get started >'. Below the main content, a descriptive text block states: 'Upload apps, build your product pages, configure prices and distribution, and publish. You can manage all phases of publishing on Google Play through the Developer Console, from any web browser.'

Uploading App Files to Google Play

File System

Store Listing - ATM - https://play.google.com/apps/publish/v2/?dev_acc=05172438564146629892#MarketListingPlaces

STORE LISTING

English (United States) Add translations

Screenshots * Default – English (United States)
320 x 480 or 480 x 800 or 480 x 854 or 1280 x 720 or 1280 x 800. JPG or 24-bit PNG (no alpha)
At least two are required.

+ Add screenshot
Drop image here.

High-res icon * Default – English (United States)
512 x 512
32-bit PNG (with alpha)

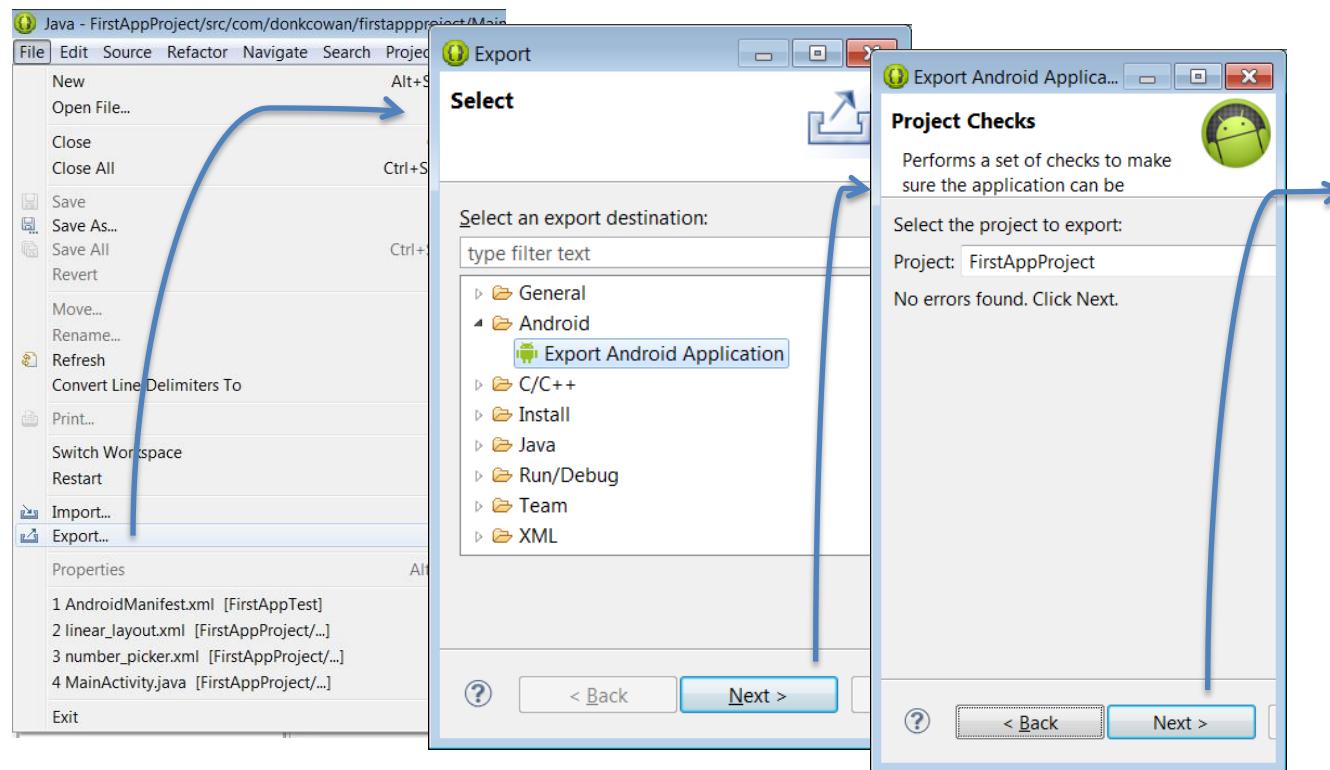
Feature Graphic Default – English (United States)
1024 w x 500 h
JPG or 24-bit PNG (no alpha)

Promo Graphic Default – English (United States)
180 w x 120 h
JPG or 24-bit PNG (no alpha)

Creating an APK (Android Package) File

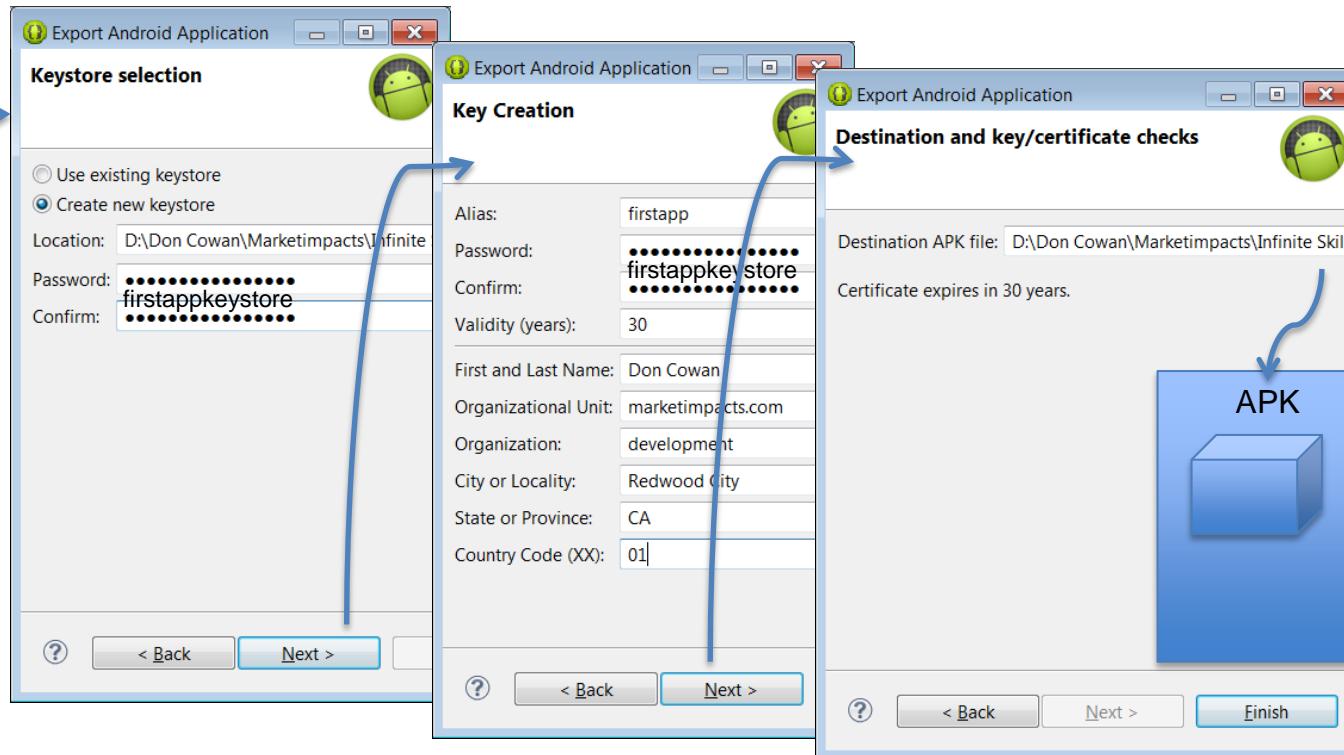


[#ExportWizard](http://developer.android.com/tools/publishing/app-signing.html)

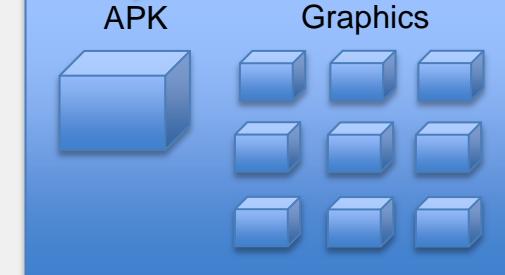


Creating an APK (Android Package) File

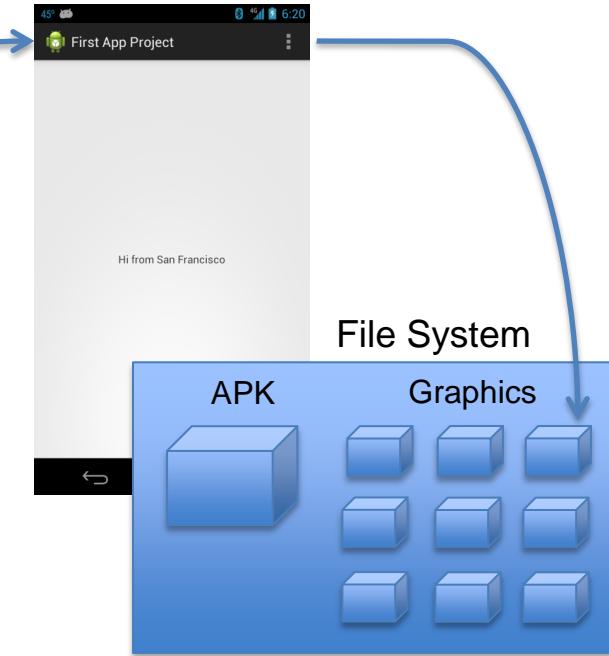
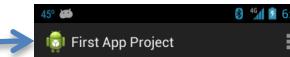
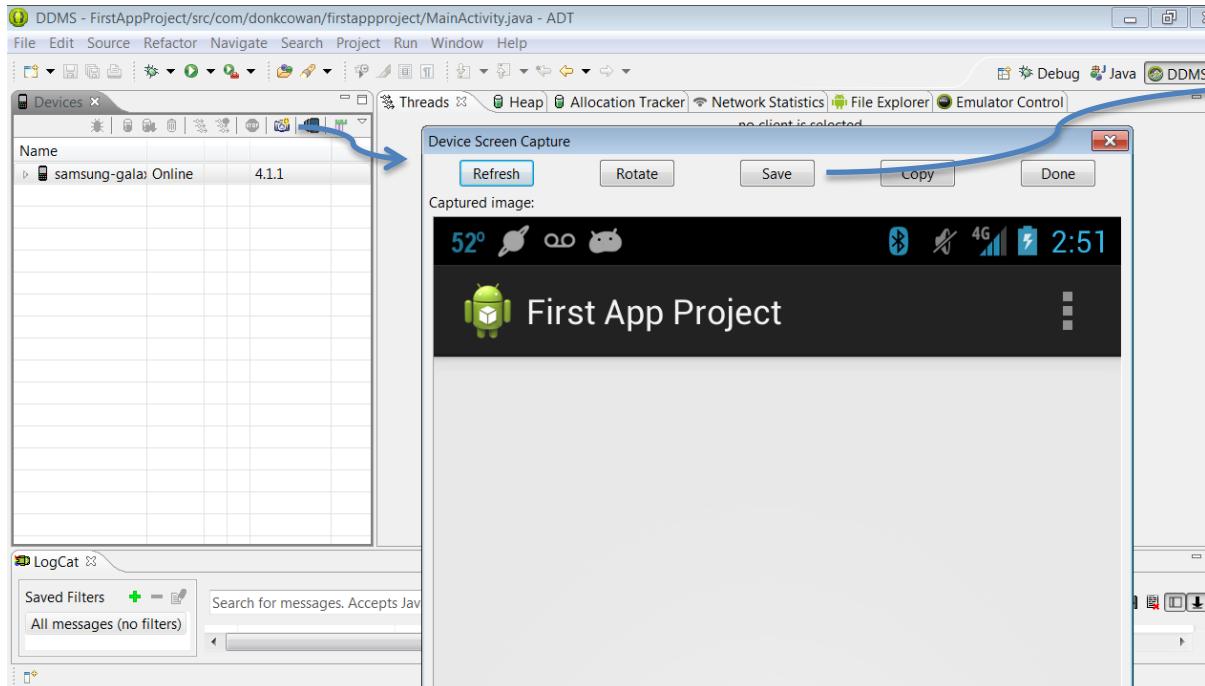
Keystore is a cryptographic key used to ensure app security.



File System



Creating App Screenshots Using DDMS



Creating Graphic Images

Image from sources such as
www.gettyimages.com



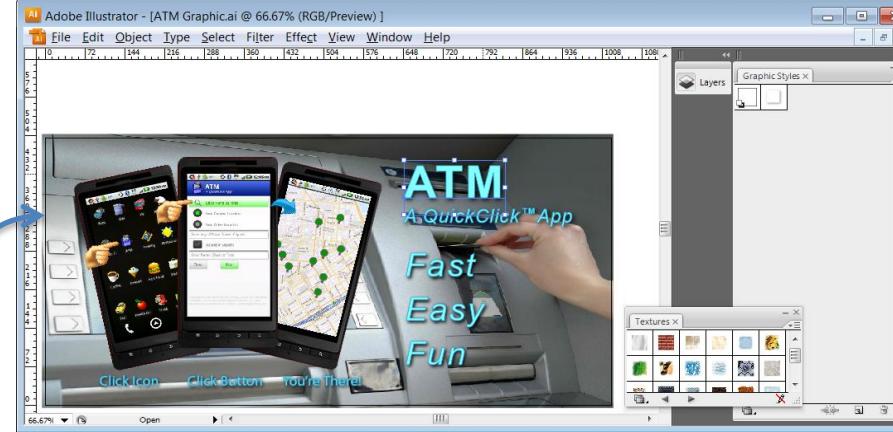
Graphics other than screen shots

High-res icon *

Default – English (United States)
512 x 512
32-bit PNG (with alpha)



Graphics software such as Adobe Illustrator



Feature Graphic

Default – English (United States)
1024 w x 500 h
JPG or 24-bit PNG (no alpha)



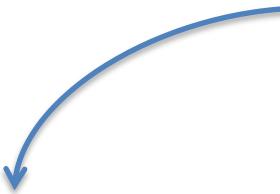
Promo Graphic

Default – English (United States)
180 w x 120 h
JPG or 24-bit PNG (no alpha)



Adobe® Illustrator® is either a registered trademark or trademark of Adobe Systems Incorporated in the United States and/or other countries.

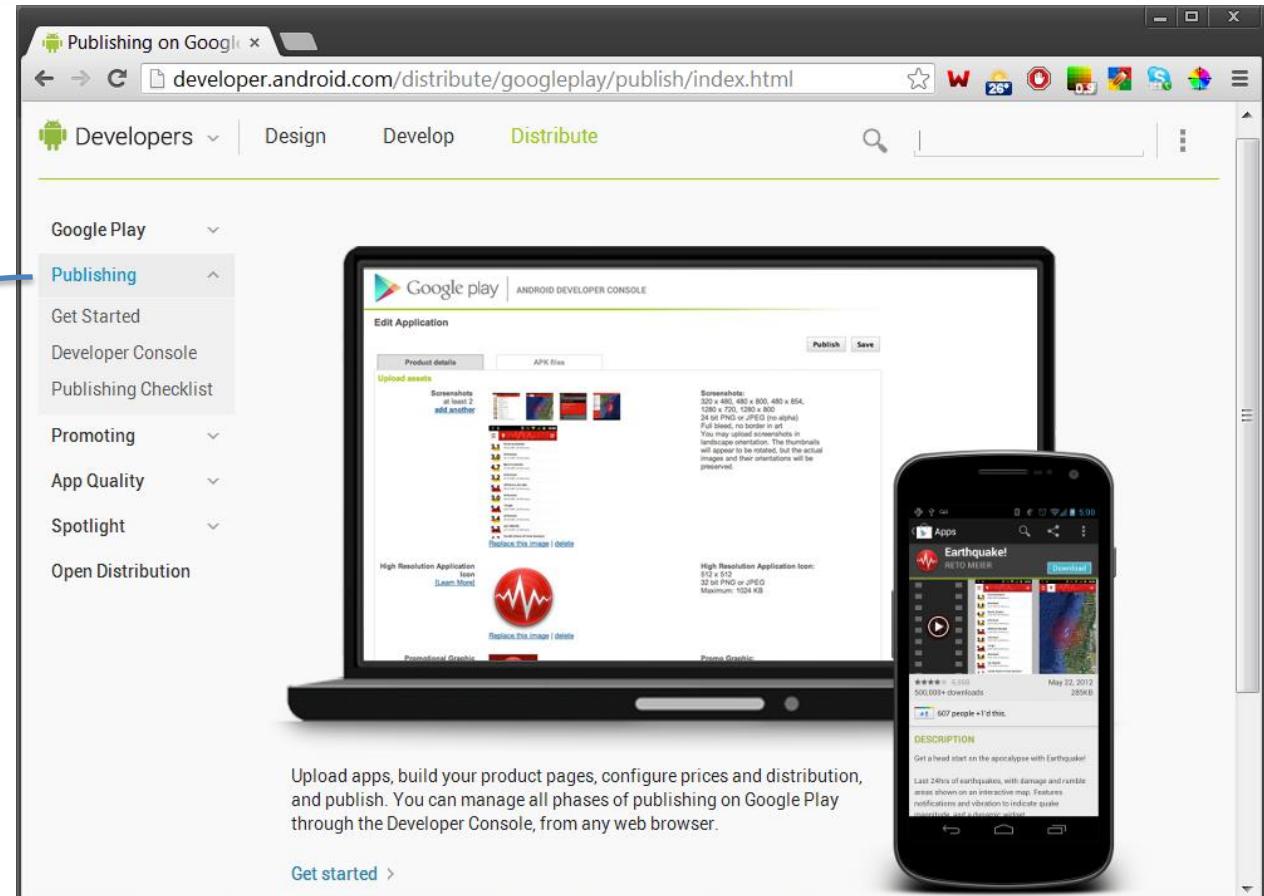
Publishing Apps to Google Play



<http://developer.android.com/distribute/googleplay/publish/index.html>

Register at:

<https://play.google.com/apps/publish/Home>



The screenshot shows the "Publishing on Google Play" page at developer.android.com. The URL in the address bar is developer.android.com/distribute/googleplay/publish/index.html. The page features a navigation menu on the left with sections like "Google Play", "Publishing" (which is selected), "Get Started", "Developer Console", "Publishing Checklist", "Promoting", "App Quality", "Spotlight", and "Open Distribution". The main content area displays the "Edit Application" screen in the "Android Developer Console". It shows various asset upload sections, including "Upload assets", "Promotional Graphics", and "High Resolution Application Icon". A large image of a laptop and a smartphone displaying the app's product page are shown. Below the main content, a descriptive text reads: "Upload apps, build your product pages, configure prices and distribution, and publish. You can manage all phases of publishing on Google Play through the Developer Console, from any web browser." At the bottom, there is a "Get started >" button.