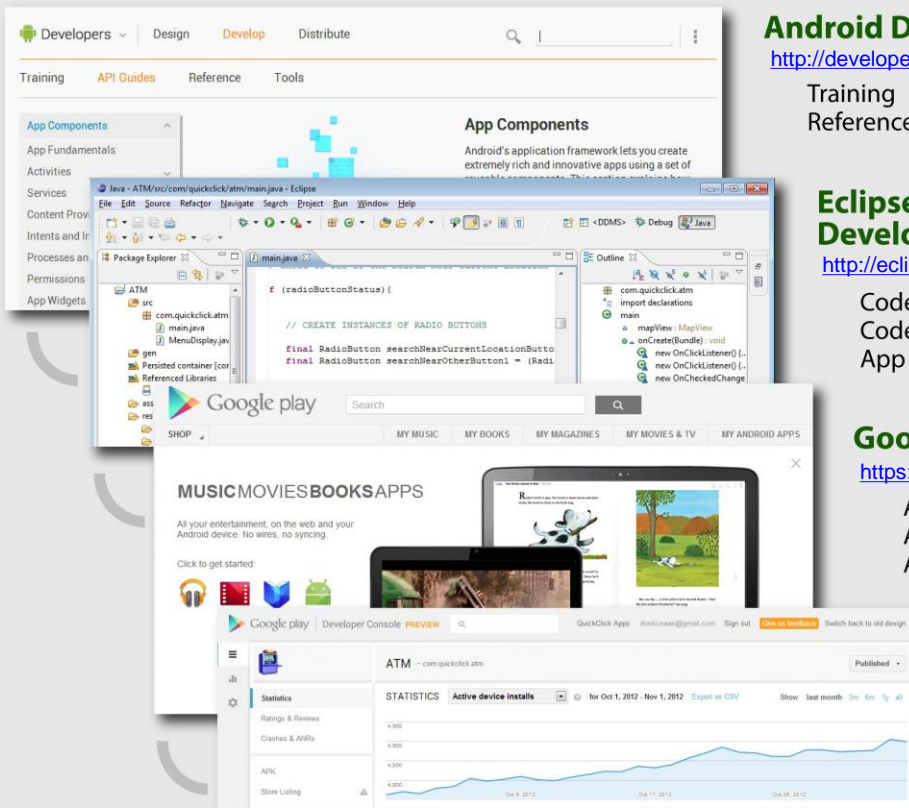


Development System Overview

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Android Developers Website

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

Training
Reference

API Guides
Code Samples

Tools
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

Development Tools Overview



Step 1



Step 2



Step 3



Step 4



Step 5



Step 6



(Optional)



Register prior to uploading apps

Java SE Development Kit (JDK)

Packages
Class Libraries
Compiler
•
•
•

Download/Install from Website:
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

Eclipse Integrated Development Environment (IDE)

Development UI
Coding Support
Screen Capture
App Packaging
•
•
•

Download/Install from Website:
<http://www.eclipse.org/>

Android Software Development Kit (SDK)

Code Libraries
Release Support
Debug Interface
API Documentation
•
•
•

Download/Install from Website:
<http://developer.android.com/sdk/index.html>

Android Development Tools (ADT)

Eclipse Plugin
Custom XML Editors
Integrated Docs
Layout Editor
Includes ADB ----->
•
•
•

Download/Install from Website:
<http://developer.android.com/tools/sdk/eclipse-adt.html>

Android Debug Bridge (ADB)

Device Comm.
Emulator Interface
•
•
•

Included in ADT

Can also be accessed via command line:
adb ...

Android Virtual Devices (AVD)

Device Emulation
Device Connection
Debugging Support
•
•
•

Download/Install from Program:
C:\Program Files (x86)\Android\android-sdk\AVD Manager

Android Sample Apps

Per Android Release
Code
Resources
•
•
•

Download/Install from Program:
C:\Program Files (x86)\Android\android-sdk\SDK Manager

Android Native Development Kit (NDK)

C/C++ Code Reuse
CPU Intensive Apps
•
•
•

Download/Install from Website:
<http://developer.android.com/tools/sdk/ndk/index.html>

Google Play

App Listings
App Uploading
App Downloading
App Statistics
Developer Console
•
•
•

Access Website at:
<https://play.google.com/store>

Register as Developer at:
<http://developer.android.com/distribute/googleplay/publish/register.html>

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

SDK for API 4.1
Jelly Bean

Samples Instructions
<http://developer.android.com/tools/samples/index.html>

Sample App

Sample App

Sample App

SDK for API 2.2
Froyo

Sample App

Sample App

Sample App

SDK for API 2.1
Eclair

Sample App

Sample App

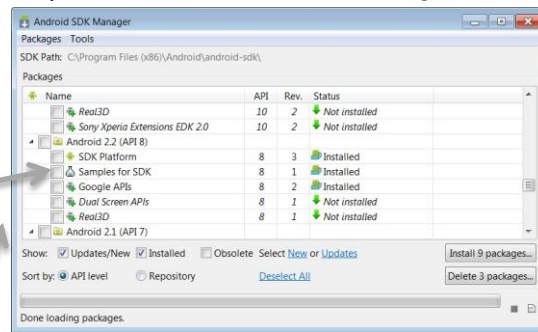
Sample App

API Levels

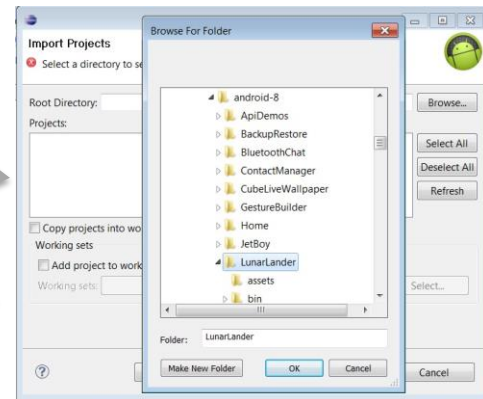
<http://developer.android.com/guide/topics/manifest/uses-sdk-element.html#ApiLevels>

Sample Apps from Android SDKs

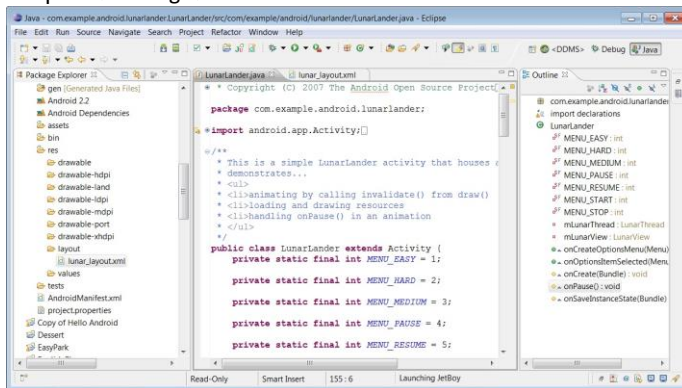
Eclipse → Window → Android SDK Manager



Eclipse → File → Import → Android → Existing Android Code Into Workspace



Eclipse → Debug → Lunar Lander



Emulator



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

Using the Emulator
<http://developer.android.com/tools/devices/emulator.html>

Android Developer Tools Bundle



Step 1

Java SE Development Kit (JDK)

Packages
Class Libraries
Compiler
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•
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Download/Install from Website:
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Step 2

Eclipse Integrated Development Environment (IDE)

Development UI
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•
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Download/Install from Website:
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Step 3

Android Software Development Kit (SDK)

Code Libraries
Release Support
Debug Interface
API Documentation
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•
•

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Step 4

Android Development Tools (ADT)

Eclipse Plugin
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Android Debug Bridge (ADB)

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Included in ADT

Can also be accessed via command line:
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Step 5

Android Virtual Devices (AVD)

Device Emulation
Device Connection
Debugging Support
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•
•

Download/Install from Program:
C:\Program Files (x86)\Android\android-sdk\AVD Manager



Step 6

Android Sample Apps

Per Android Release
Code
Resources
•
•
•

Download/Install from Program:
C:\Program Files (x86)\Android\android-sdk\SDK Manager



(Optional)

Android Native Development Kit (NDK)

C/C++ Code Reuse
CPU Intensive Apps
•
•
•

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



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App Downloading
App Statistics
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<http://developer.android.com/distribute/googleplay/publish/register.html>

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

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

Java Programming Language Resources

Overviews

Java: [http://en.wikipedia.org/wiki/Java_\(programming_language\)](http://en.wikipedia.org/wiki/Java_(programming_language))
Android Java: http://en.wikipedia.org/wiki/Comparison_of_Java_and_Android_API
Object Oriented Programming: http://en.wikipedia.org/wiki/Object-oriented_programming

References

Oracle Tutorials: <http://docs.oracle.com/javase/tutorial/index.html>
Android APIs: <http://developer.android.com/reference/packages.html>
Books: http://www.amazon.com/s/ref=nb_sb_noss_1?url=search-alias%3Dstripbooks&field-keywords=java+programming&sprefix=java+programming%2Cstripbooks%2C239&rh=n%3A283155%2Ck%3Ajava+programming

Courses

Basics: <http://www.infiniteskills.com/training/learning-to-program-with-java-the-basics.html>
Advanced: <http://www.infiniteskills.com/training/advanced-java-programming.html>
Bundle: <http://www.infiniteskills.com/training/java-programming-bundle.html>

Eclipse IDE Resources

Overviews

Eclipse: http://en.wikipedia.org/wiki/Eclipse_ide
IDE: http://en.wikipedia.org/wiki/Integrated_development_environment

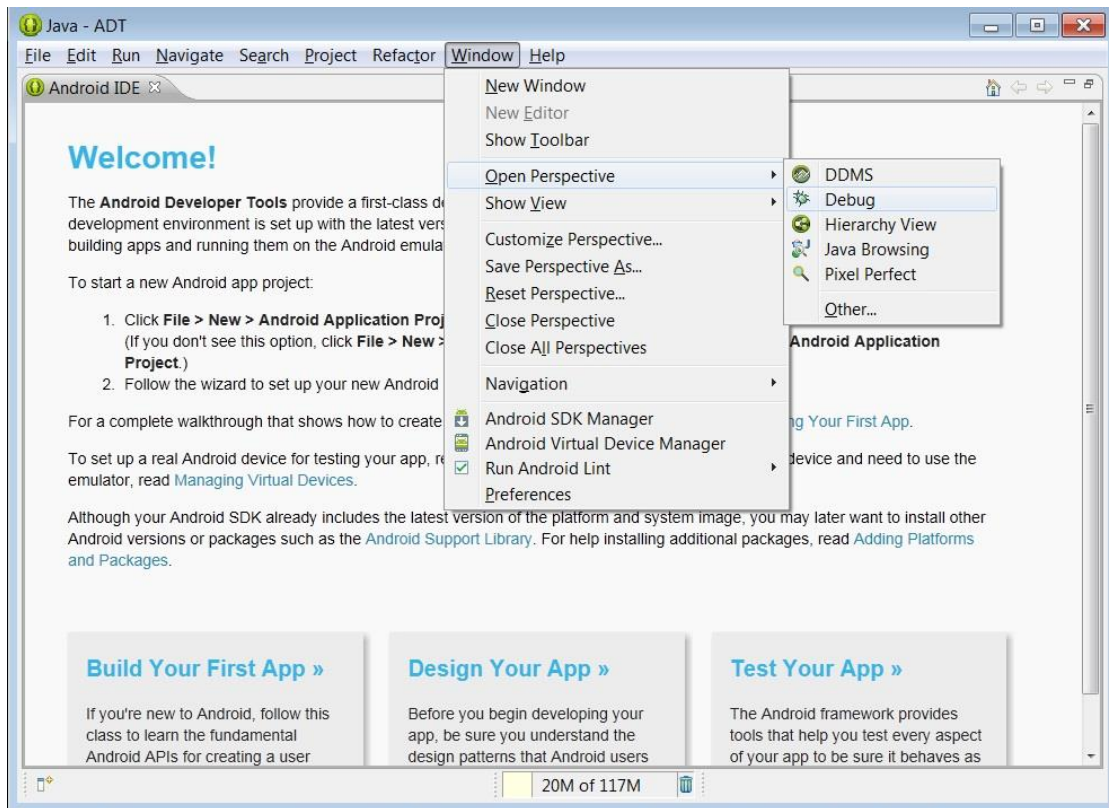
References

Eclipse Website: <http://www.eclipse.org/>
Eclipse Resources: <http://www.eclipse.org/resources/>
Eclipse Docs: <http://www.eclipse.org/documentation/>
Eclipse Books: http://www.amazon.com/s/ref=nb_sb_noss_1?url=search-alias%3Dstripbooks&field-keywords=eclipse+ide

Courses

Eclipse Training: <http://www.eclipse.org/community/training/classes.php>
Eclipse Tutorials: <http://eclipsetutorial.sourceforge.net/totalbeginner.html>

Eclipse ADT Open Perspective



Android Virtual Device Resources

Overviews

Managing Virtual

Devices:

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

Using the AVD

Manager:

<http://developer.android.com/tools/devices/managing-avds.html>

References

Graphics Display

Resolution:

http://en.wikipedia.org/wiki/Graphics_display_resolution

AVD Hardware

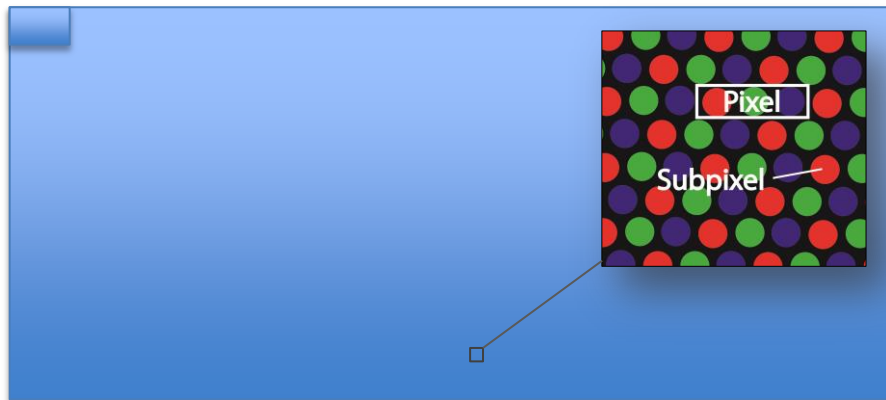
Options:

<http://developer.android.com/tools/devices/managing-avds.html#hardwareopts>

Device Screen Dimensions and Densities

VGA Video Graphics Array	160 x 120 - 1024 x 600
XGA Extended Graphics Array	1024 x 768 - 7680 x 4800
HD High Definition	640 x 360 - 7680 x 4320

Q	Quarter
Q	Quad
H	Half
W	Wide
F	Full
S	Super
D	Double
H	Hyper
U	Ultra



ldpi	low	≈ 120 dpi
mdpi	medium	≈ 160 dpi
hdpi	high	≈ 240 dpi
xhdpi	extra high	≈ 320 dpi
tvdpi	TV	

Display Resolutions:

http://en.wikipedia.org/wiki/Graphics_display_resolution

Android Displays:

<http://developer.android.com/design/style/devices-displays.html>

Virtual Devices:

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

Hardware Acceleration:

<http://developer.android.com/tools/devices/emulator.html#accel-vm>

Managing AVDs:

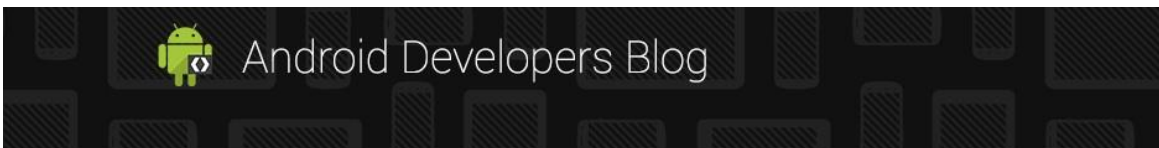
<http://developer.android.com/tools/devices/managing-avds.html>

Android Emulator

Read about improved emulator and GPU (Graphics Processing Unit) support on the Android Developers Blog at:

<http://android-developers.blogspot.com/2012/04/faster-emulator-with-better-hardware.html>

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09 APRIL 2012

A Faster Emulator with Better Hardware Support

[This post is by Xavier Ducrohet and Reto Meier of the Android engineering team. — Tim Bray.]

The Android emulator is a key tool for Android developers in building and testing their apps. As the power and diversity of Android devices has grown quickly, it's been hard for the emulator keep pace.

Today we're thrilled to announce several significant improvements to the emulator, including a dramatic performance upgrade and support for a broader range of hardware features, notably sensors and multi-finger input.

Added GPU Support

The system image we're shipping today has built-in GPU support (Android 4.0.3 r2). With Android's growing reliance on using the GPU to improve performance, the difference is significant. In the video below, the emulator is still interpreting ARM instructions; the performance boost is the effect of putting the GPU to work.

