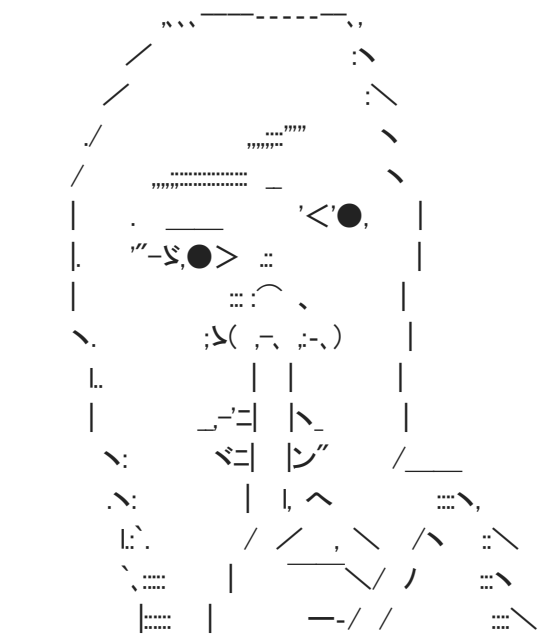
Title : HELLO ANDROID



Author : Ryo Terunuma

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1. Preface

1.1. Intro

This document focus to simple android development things .
So this document do not include sale , maintenance and others things.

1.2. Environment

This document wrote content of following development & confirmation environment.

Platform

Platform	Development	Confirmation	JDK
Ubuntu 11.04	✓	✓	1.6.0_24
Windows 7	✗	✓	1.6.0_22

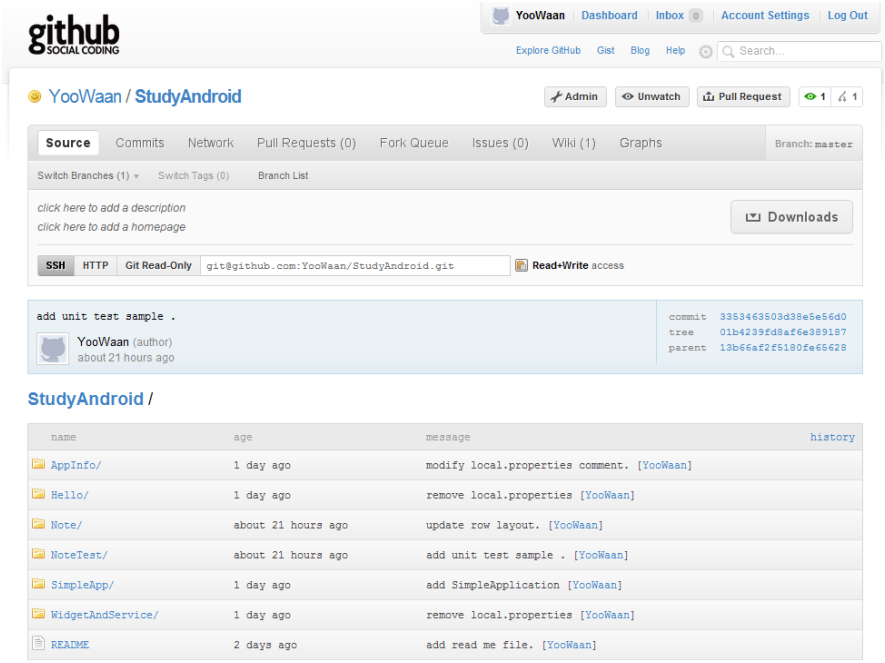
Device

HT 03

1.3. Sources

Sources is stored on git-hub . If you need source check below .

URL : https://github.com/YooWaan/StudyAndroid



Summary of Directory

name	description
AppInfo/	Application Information Sample
Hello/	Hello World Sample
Note/	SQLite ContentProvider Sample
NoteTest/	Note app UnitTest Sample
SimpleApp/	Simple Application Sample
WidgetAndService/	Widget and Service Sample
Guid.pdf	Guide Document
local.properties	building local properties
tool.xml	utility ant tasks xml

About tool.xml

ant Target Overview
- clean : ant –f build.xml clean
- compile : ant –f build.xml releae
- apk-copy : copy from bin/your.apk to dist/specified apk file.
- keystore : generate new keystore
- sign : sign to apk file.

name	description
clean	execute clean of build.xml on android project
compile	execute compile of build.xml on android project
apk-copy	copy apk to distribution dir
keystore	generate private key
sign	sign to apf file
test	execute unittest

For execute ant by tool.xml , Please prepare tool.properties file

tool.properties

name	description
app.apk	App apk filename
unsigned.apk	File name of generated by “ant release” command
sign.alias	private key alias
sign.keystore	keystore file name
sign.storepass	keystore password
dname.xxx	private key for c, st, l, o, ou, cn names
test.package	test package name

2. Setup

This chapter is setup of android development environment.
Each sections are wrote simple operation steps .

2.1. SDK

1.setup system . Install JDK and Others .

Note
Ubuntu x64 need preparing .
URL : http://developer.android.com/sdk/requirements.html

Install for ubuntu

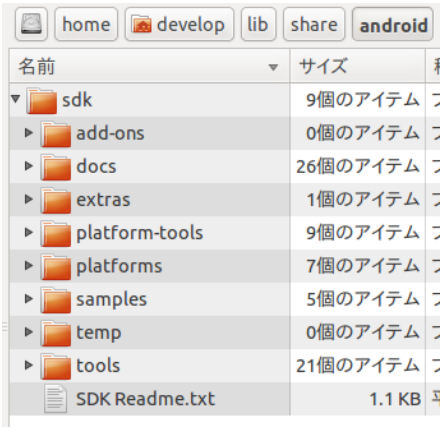
Terminal

```
$ sudo apt-get install ia-32libs

$ sudo apt-get install sun-java6-jdk
```

2.download sdk .
URL : http://developer.android.com/sdk/index.html

3.deploy (decompress) sdk archive file .



4.execute android and intall sdk .
URL : http://developer.android.com/sdk/installing.html

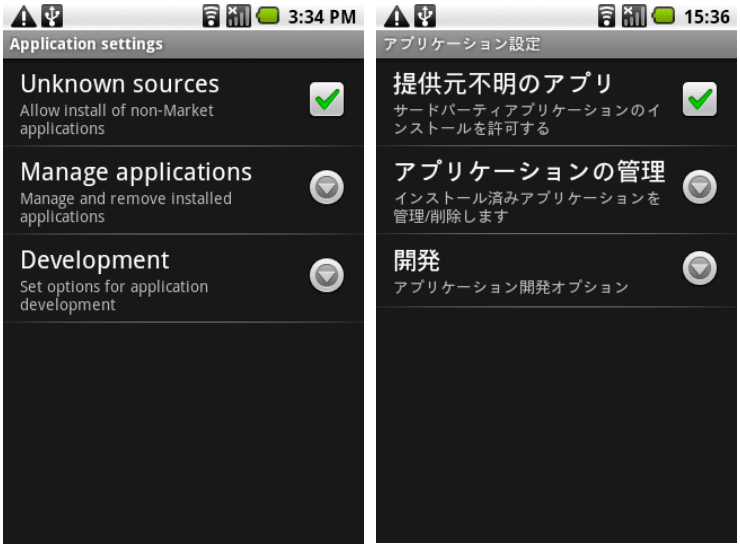
5.set path to android tools platform-tools

.bashrc

```
export JAVA_HOME=/usr/lib/jvm/java-6-sun
export ANDROID_HOME=~/lib/share/android/sdk
export PATH=${JAVA_HOME}/bin:${PATH}:${ANDROID_HOME}/tools:${ANDROID_HOME}/platform-tools
```

2.2. Device & Driver

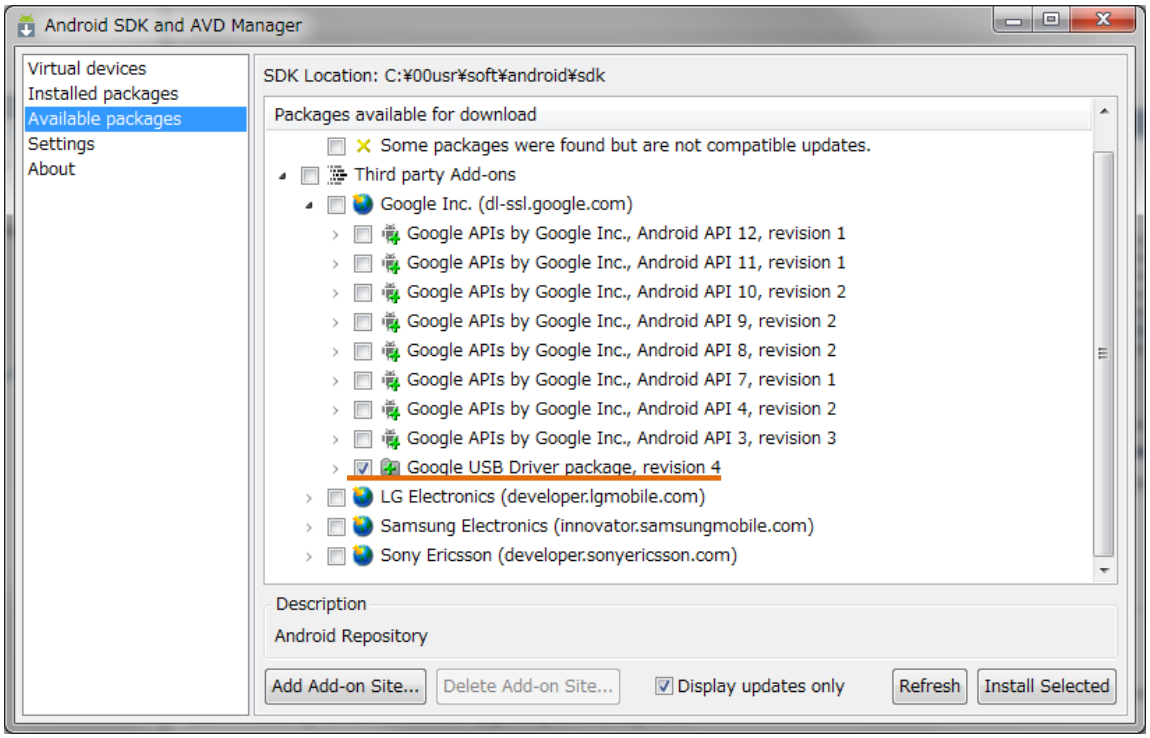
1. Check Your device's "Unknown sources" .



2. see http://developer.android.com/guide/developing/device.html
3. write /etc/udev/rules.d/51-android.ruls

```
/etc/udev/rules.d/51-android.
SUBSYSTEM=="usb", SYSFS{idVender}="0bb4", MODE="0666"
SUBSYSTEM=="usb_devide", SYSFSidVender{}="0bb4", MODE="0666"
```

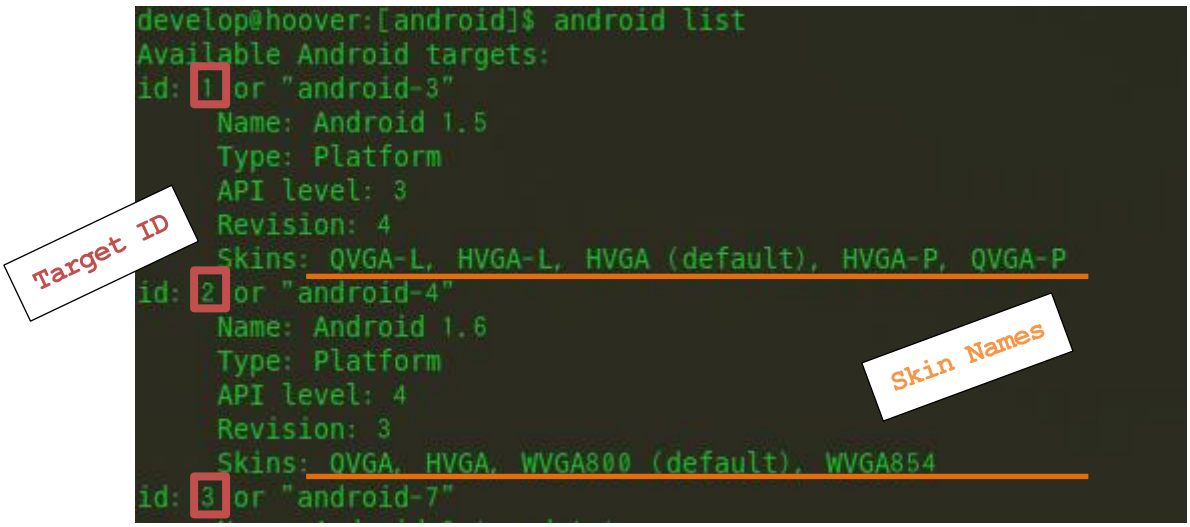
Windows : Install by SDK & AVD Manager



2.3. Emulator

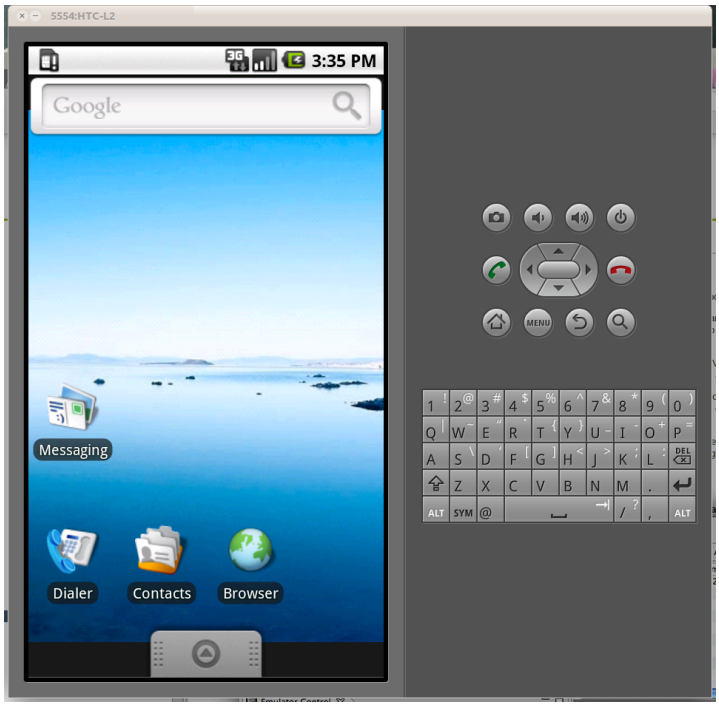
1. create avd (Android Virtual Device).

```
Terminal
$ android create avd -n <avd_name> -t <targetID> -s <skin_name>| <width>-<height>
```



2. execute emulator.

```
Terminal
$ emulator -avd <avd_name>
```

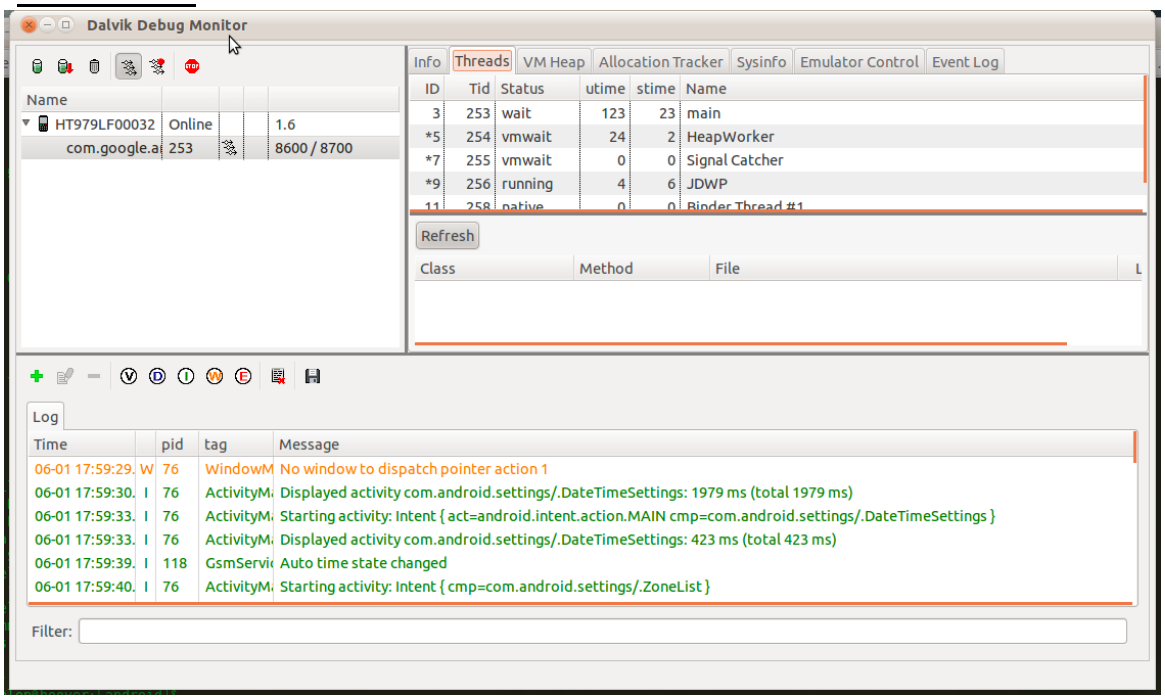


2.4. Debugger

1. execute ddms (Dalvik Debug Monitor Server) .

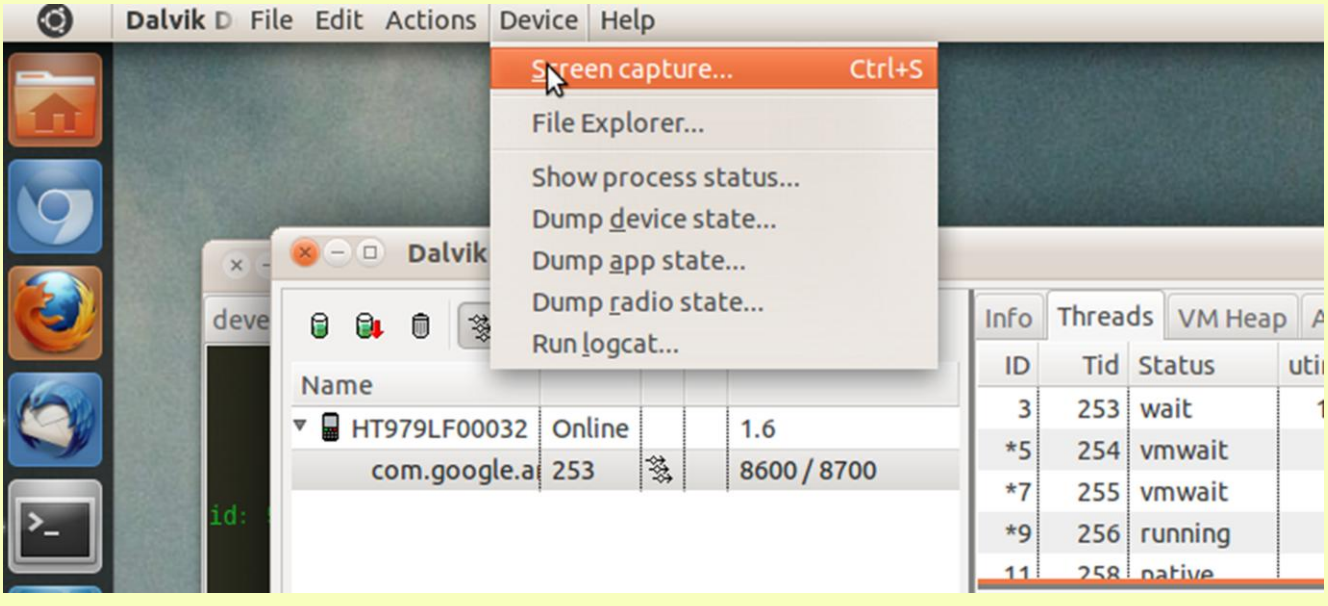
```
Terminal
$ ddms
```

DDMS Window



How to get Screen Capture

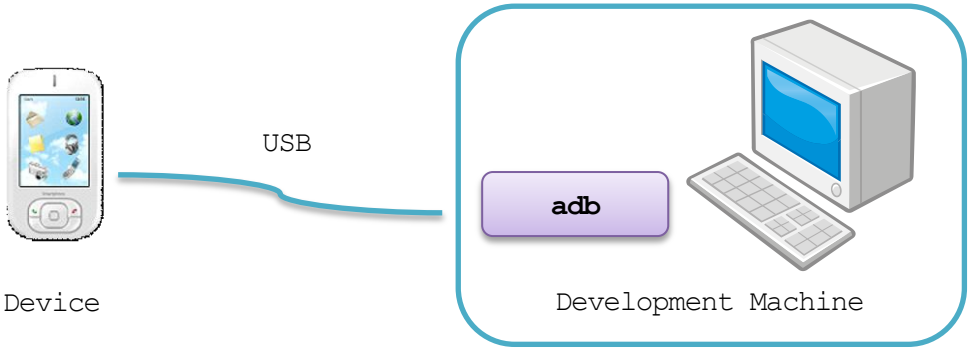
Device > Screen capture > Opened Dialog Save



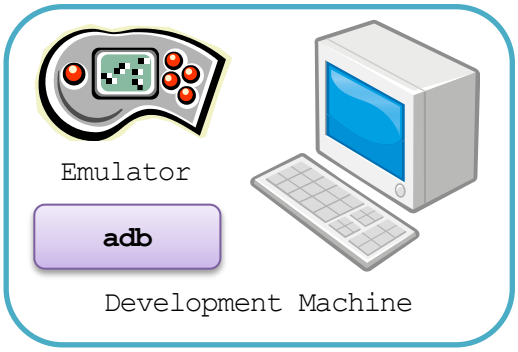
2.5. Device Arrangement

This section is Development Tools arrangement example .
Simple arrangement is connecting one device or one emulator .

Devide – Development Machine



Emulator – Development Machine



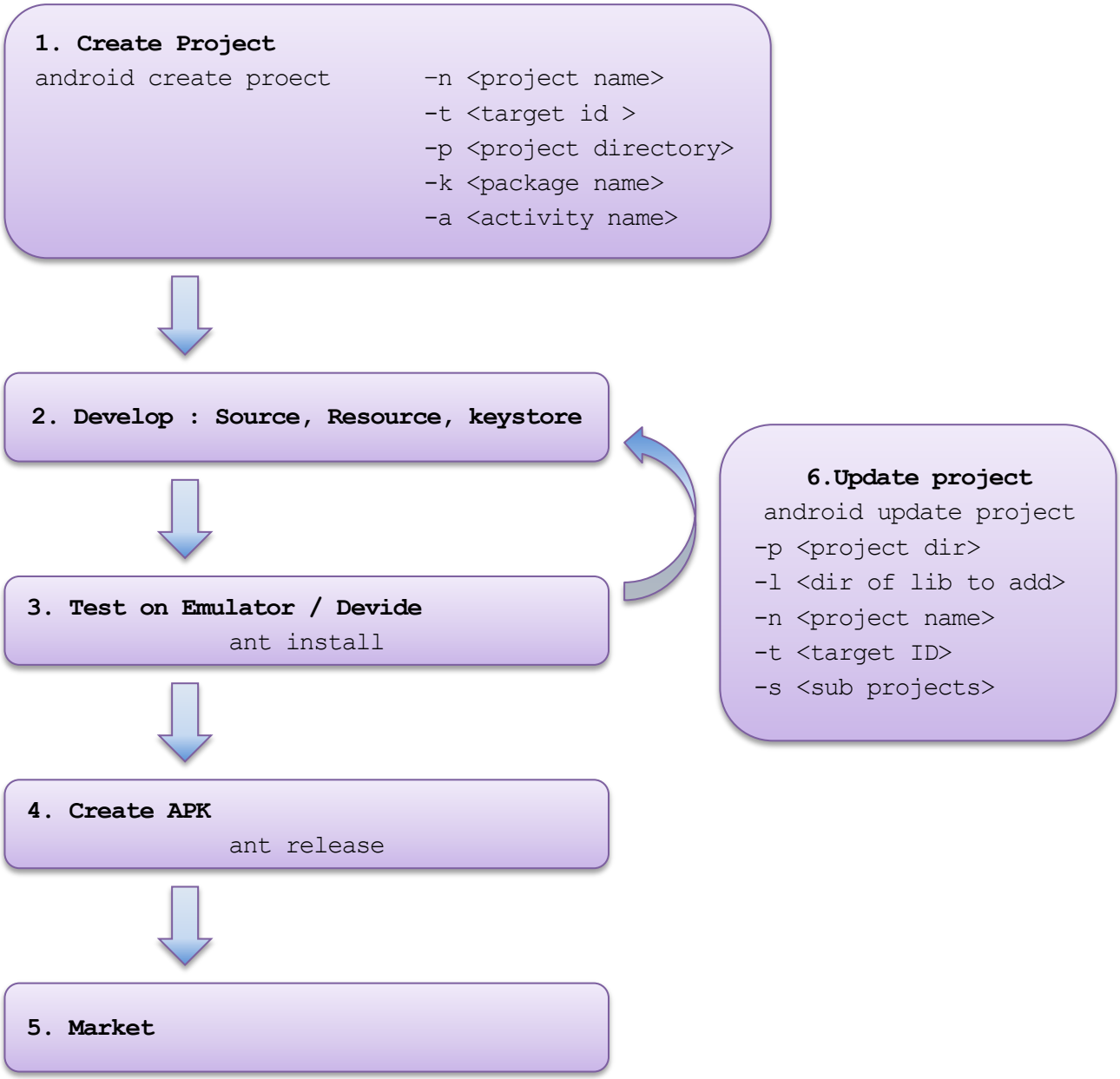
Check Devices

```
Terminal

$ adb devices
List of devices attached
HT979LF00032    device
Emulator-5554   device
```

3. Development

3.1. Cycle



3.2. Market

see Android Market Topics
see http://developer.android.com/guide/publishing/licensing.html
see http://developer.android.com/guide/market/billing/index.html

4. Application

This chapter is building app Hello World and application's information .
The application's information app build by follow steps .

4.2 Create application project .
4.3 Update build.xml .
4.4 Create private key for sign .
4.5 Edit AndroidManifest.xml and source .
4.6 Install to device and run app.

4.1. HelloWorld

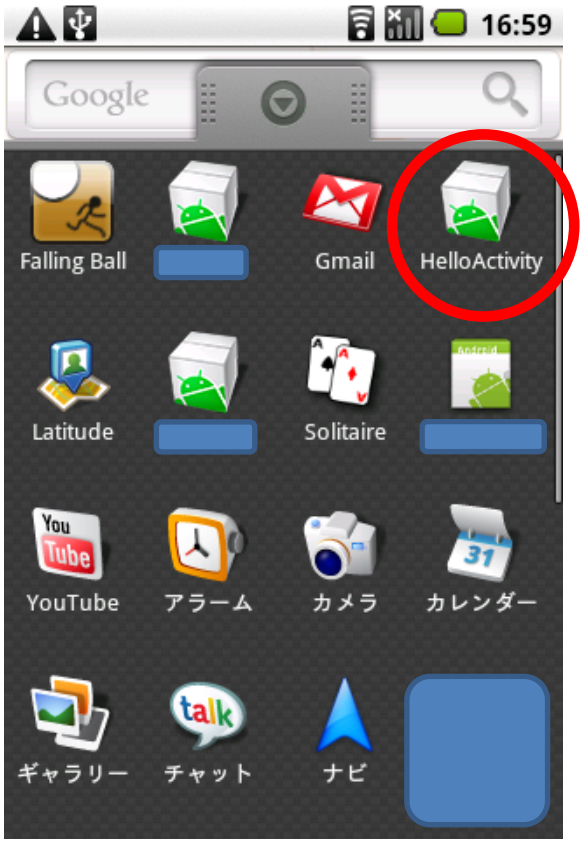
This section create Hello World Application and install it to device.

```
Terminal

$ android create project -n Hello -t 2 -p Hello -k app.hello -a HelloActivity

$ ant install
```

Install & Run Applicaton Result



4.2. Create Application Information Project

This section is createing Aplicaton Information app project.

```
Terminal

$ android create project -n AppInfo -t 2 -p AppInfo -k app.AppInfo -a AppInfo
```

4.3. Update build.xml

This section is customising build.xml and adding releasetool.xml for easy development and release .

Update build.xml for easy development .

```
<?xml version="1.0" encoding="UTF-8"?>
<project name="Your Project" default="help">
        <property file="../local.properties" />
        :
        : Original Ant Targets
        :
        <!—Clean and Compile -->
        <target name="compapp" depends="clean,compile" />
        <!—Clean and Install -->
        <target name="app" depends="clean,install" />

</project>
```

This file depend on local environment.
Be careful committing to source repository .

4.4. Create Private Key

Application requires digitally sign . This section is creating private key by releasetool.xml

```
Terminal

$ ant -f ../tool.xml keystore

$ ls
AndroidManifest.xml    apk.sign.keystore    …
```

4.5. Edit Source and Manifest

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.andro                pk/res/android"
          package="app.appinfo"
          android:versionCode="1"
          android:versionName="Application&#xa;Information&#xa;1.0.0&#                &#169; Your
Organization.&#xa;All rights reserved.">
    <application android:label="@string/app_name">
```

Version code

Version Name

app.appinfo.AppInfo.java

```
/**
 * @return version Code
 */
public int getVersionCode() {
        try {
                PackageManager manager = getPackageManager();
                PackageInfo packInfo = manager.getPackageInfo(getPackageName(),
                                                        PackageManager.GET_ACTIVITIES);
                return packInfo.versionCode;
        } catch (Exception e) {
                return -1;
        }
}

/**
 * @return version Name
 */
public String getVersionName() {
        try {
                PackageManager manager = getPackageManager();
                PackageInfo packInfo = manager.getPackageInfo(getPackageName(),
                                                         PackageManager.GET_ACTIVITIES);
                return packInfo.versionName;
        } catch (Exception e) {
                return "---";
        }
}
```

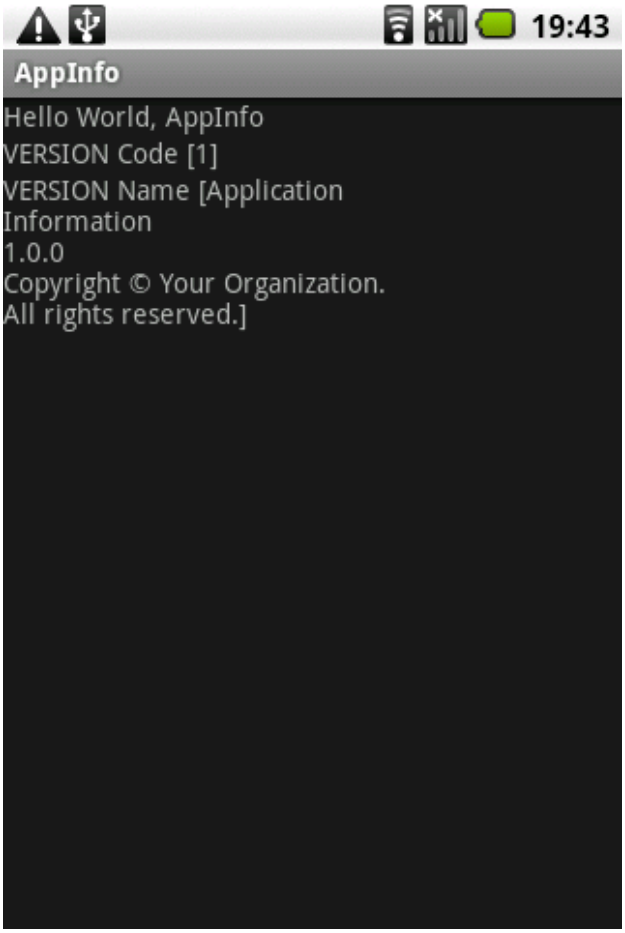
4.6. Install APK and Run app

After create apk file . install application to device .

```
Terminal

$ adb install dist/AppInfo.apk
```

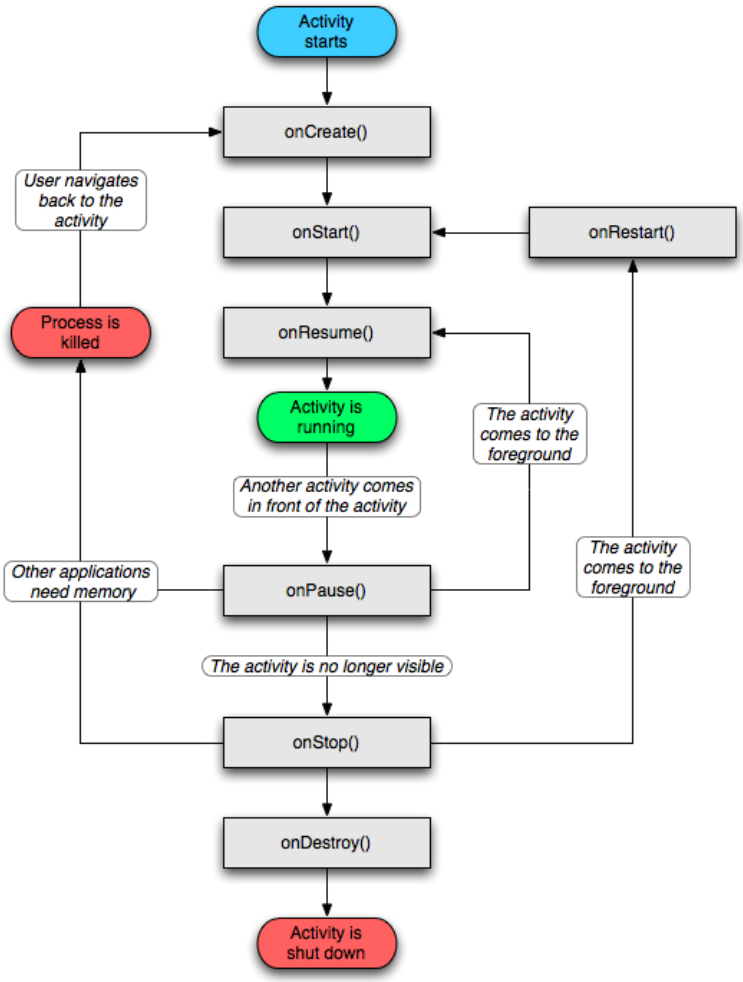
Application Result



5. Activity

5.1. Lifecycle

Activity state path diagram .
URL : http://developer.android.com/reference/android/app/Activity.html



Result Log

```
Terminal
$ adb logcat -d  | tail -n 20
I/ActivityManager(   76): Start proc app.simple for activity app.simple/.SimpleApp: pid=3438 uid=10042
gids={1015}
I/ActivityManager(   76): Displayed activity app.simple/.SimpleApp: 1047 ms (total 1047 ms)
I/ActivityManager(   76): Starting activity: Intent { cmp=app.simple/.LifeCycleActivity }
I/LifeCycleActivity( 3438): onCreate()
I/LifeCycleActivity( 3438): onStart()
I/LifeCycleActivity( 3438): onResume
I/ActivityManager(   76): Displayed activity app.simple/.LifeCycleActivity: 136 ms (total 136 ms)
I/LifeCycleActivity( 3438): onPause
I/LifeCycleActivity( 3438): onStop
I/LifeCycleActivity( 3438): onDestroy
```

5.2. Start Activity

```
SimpleApp/src/app/simple/SimpleApp.java

Intent intent = new Intent();
intent.setClass(SimpleApp.this, LifeCycleActivity.class);
startActivity(intent);
```

5.3. Resource

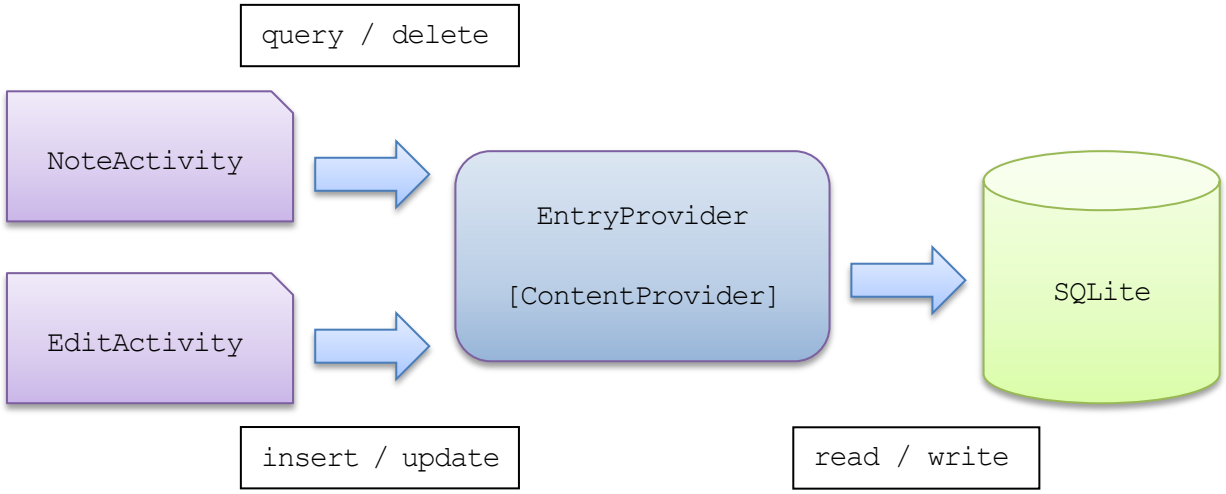
name	description
res/drawable	
res/drawable-xdpi	ldpi, mdpi, hdpi, nodpi, xhdpi
res/layout	default UI layout xml
res/layout-land	UI layout xml in landscape
res/values/	default resource
res/values-{lang}	each language resource
strings.xml	resource file
arrays.xml	TypedArray resource file

* drawable
http://developer.android.com/guide/practices/screens_support.html#qualifiers

* Typed Array
http://developer.android.com/guide/topics/resources/more-resources.html#TypedArray

6. ContentProvider & SQLite

6.1. Overview



6.2. Edit Source

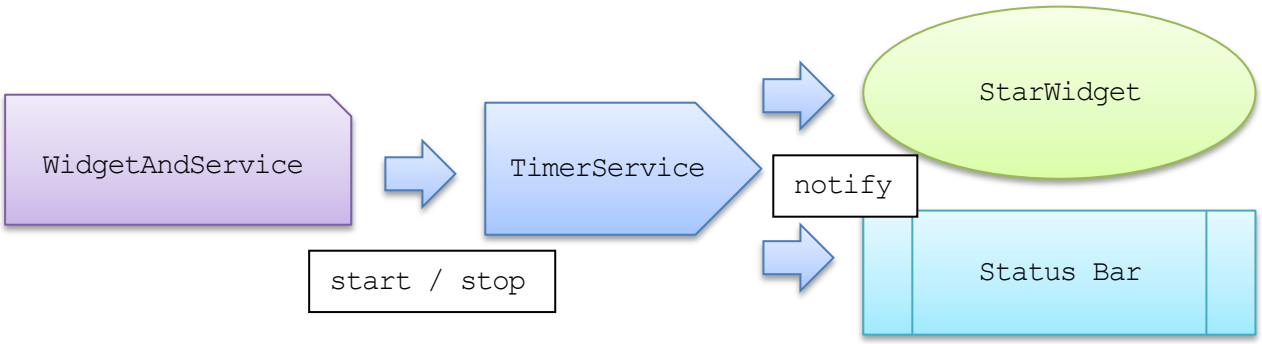
name	description
src/app/note	Application source
NoteActivity	List Activity
EditActivity	Edit Entry form Activity
EntryProvider	ContentProvider
res/layout	Application layout
main.xml	List view layout
edit.xml	edit form layout
row.xml	list item layout

6.3. Show Database

```
develop@hoover:[Note]$ adb shell
# cd /data/data/app.note/databases
# sqlite3 entry.db
SQLite version 3.5.9
Enter ".help" for instructions
sqlite> select * from entries ;
1|aaa|test|1307270141264
sqlite> .quit
# exit
develop@hoover:[Note]$
```

7. Widget & Service

7.1. Overview



7.2. Edit Source & Resource

name	description
src/app/ws	Application source
WidgetAndService	Service controller
TimerService	Notify Service
StarWidget	Widget
res/drawable	Application layout
some icons	Widget Icons
res/layout	
main.xml	Service controller layout
widget.xml	widget layout
res/xml	
star.xml	widget configuration file

7.3. Run


20:14
Widget


2011年6月5日
20:15
(通信サービスなし)
NTT DOCOMO
通知を消去
実行中
USBデバッグが接続されました
コンピュータが携帯に接続されました。
USB接続
パソコンとの間でファイルをコピーします。
通知
Service Notification
Color change [GREEN]
20:11

8. UnitTest

8.1. Create Test Project

```
Terminal
$ android create test-project -p <project dir> -m <target project dir> -n <project name>

#Example
$ android create test-project -p NoteTest -m ../Note -n NoteTest
```

8.2. Edit Testcase

name	description
src/app/note	Test Application source
NoteActivityTest	Testcase

8.3. Run

After install test project application, execute adb command.

```
develop@hoover:[NoteTest]$ adb shell am instrument -w app.note.tests/android.test.InstrumentationTestRunner
app.note.NoteActivityTest:.
Test results for InstrumentationTestRunner=.
Time: 1.429

OK (1 test)
```