

Report on the Progress (10/18/2010-10/22/2010)

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Overview

This week I set up and configured necessary Android developing environment including installing SDK, ADT Plug-in, AVD Manager. After that I implemented Android locating functions by network and GPS and test programs on the emulator and phone. In the test programs the latitude, longitude and fix time could be showed on the screen. Also the user can choose whether network or GPS is used to get the location information.

Setting up developing environment

Before getting started with the Android SDK the user needs to install the JDK. After that I added the location of the SDK's primary tools directory to your system PATH. I used AVD Manager to install USB Driver for Android-powered device which is used for debugging and testing, Google APIs add-on which gives access to the Maps external library.

In order to develop and test programs, I created an Android Virtual Device (AVD). An AVD defines the system image and device settings used by the emulator.

PROGRAM FOR LOCATING

```
package com.second;
```

```
import android.app.Activity;
import android.content.Context;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.util.Log;
import android.widget.TextView;
```

```
public class second extends Activity {
    long interval_get;
    long interval_update;
    TextView tv;
    LocationManager locationManager;
```

```
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        tv = new TextView(this);
```

```

setContentView(R.layout.main);

locationManager =
(LocationManager) getSystemService(Context.LOCATION_SERVICE);
tv.setText("
"+locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER));
setContentView(tv);

long begin = System.currentTimeMillis();
Location location =
locationManager.getLastKnownLocation(LocationManager.GPS_PROVIDER);
long end = System.currentTimeMillis();
interval_get = end - begin;

begin = System.currentTimeMillis();
locationManager.requestLocationUpdates("gps", 1000, (float)0.01,
locationListener);
end = System.currentTimeMillis();
interval_update = end - begin;
if(location == null){
    tv.setText("no GPS");
    setContentView(tv);
}
else {
    double latitude =location.getLatitude();
double longitude = location.getLongitude();
tv.setText("after requestLocationUpdates:\n latitude:"+latitude+
"\n longitude:"+longitude+"\n interval_get:"+interval_get+
"\n interval_update"+interval_update);
    setContentView(tv);
}
}

private final LocationListener locationListener = new LocationListener() {
public void onLocationChanged(Location location) {

if (location != null)
    {
double latitude =location.getLatitude();
double longitude = location.getLongitude();
tv.setText("LocationChanged:\n latitude:"+latitude+
"\n longitude:"+longitude+"\n interval_get:"+interval_get+

```

```

        "\n interval_update"+interval_update);
        setContentView(tv);
    }
    else {
        tv.setText("no signal");
        setContentView(tv);
    }

}

public void onProviderDisabled(String provider) {

}

public void onProviderEnabled(String provider) {

}

public void onStatusChanged(String provider, int status, Bundle extras) {

}
};

}

```

PROGRAM FUNCTION

The programs are used to get the latitude, longitude and fix time information. After the application is launched, listener monitors the change of location and sends latitude, longitude and time for updating location to the screen.

PROGRAM COMMENTS

An Activity is a single application entity that is used to perform actions. An application may have many separate activities, but the user interacts with them one at a time.

The onCreate() method will be called by the Android system when Activity starts where I perform all initialization and UI setup.

A View is a drawable object used as an element in UI layout, and the subclass that handles text is TextView.

A Context is a handle to the system which provides services. The class `android.content.Context` provides the connections to the Android system. Contexts provides the method `getSystemService` which allows to receive a manager object for the different hardware parts.

I request an instance from the system by calling `getSystemService(Context.LOCATION_SERVICE)`. The method returns a handle to a new `LocationManager` instance.

I use `locationManager.requestLocationUpdates` to register for periodic updates of the user's current location from a location provider

NOTE: In order to use location information I set some permissions to AndroidManifest.xml:

```
<uses-permission  
android:name="android.permission.ACCESS_FINE_LOCATION"></uses-  
permission>  
<uses-permission android:name="android.permission.INTERNET"></uses-  
permission>  
<uses-permission  
android:name="android.permission.ACCESS_COARSE_LOCATION"></uses-  
permission>  
<uses-permission  
android:name="android.permission.ACCESS_MOCK_LOCATION"></uses-  
permission>
```

TESTING PROGRAM

After booting the AVD and pushing the application into emulator, I send latitude and longitude information to the emulator in order to enable the GPS location provider by DDMS. Every time the location information changes, that information shows up on the screen.

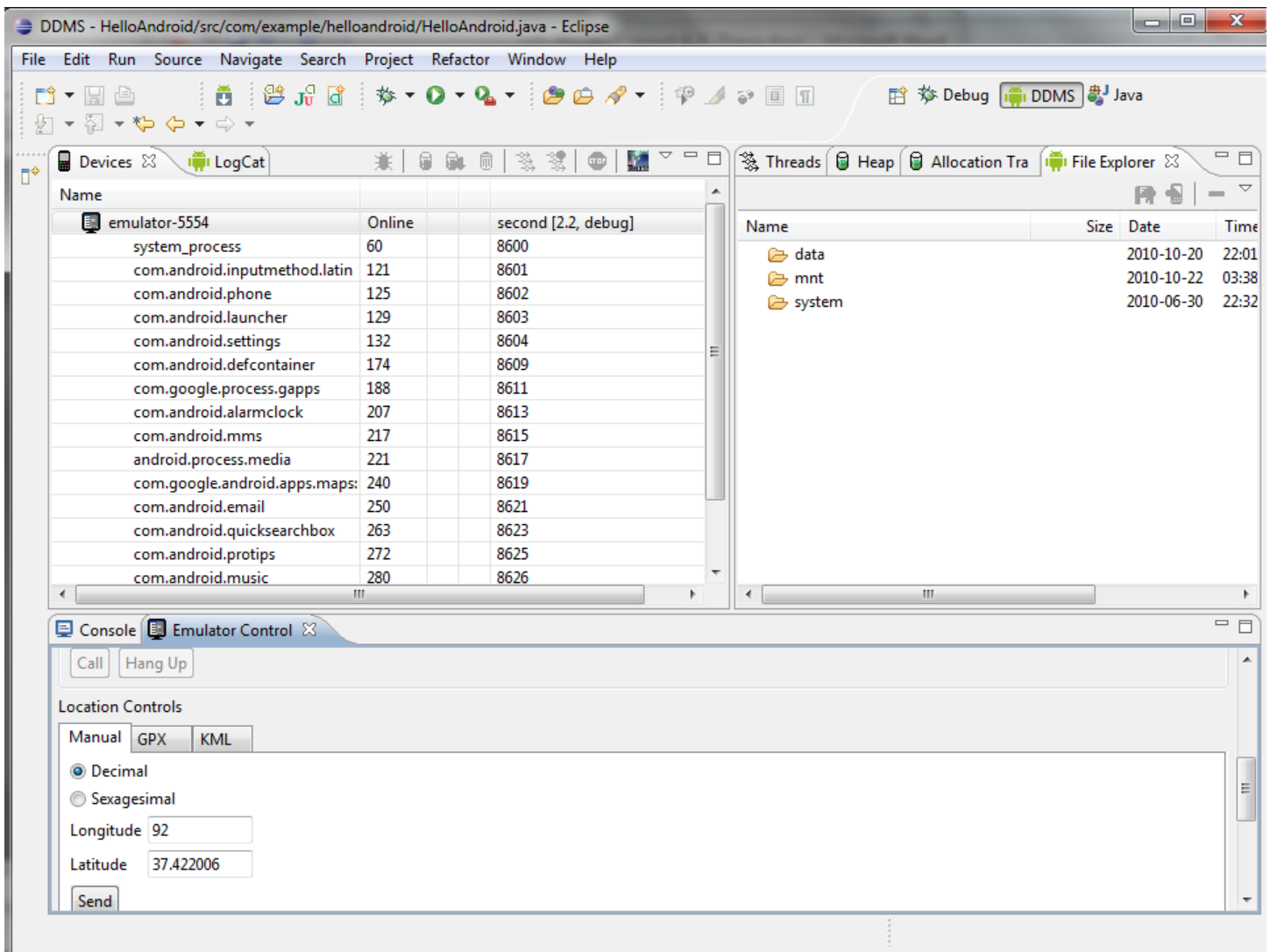
Below is the result of the programs running on the emulator.

second

new latitude:37.42283421666665
longititude:92.01533333333333



1 !	2 @	3 #	4 \$	5 %	6 ^	7 &	8 *	9 (0)
Q	W ~	E "	R `	T {	Y }	U -	I `	O + P =
A S \	D ' F [G]	H <	J >	K ;	L :	DEL	
↑	Z X	C V	B N	M .	↵			
ALT	SYM	@		→	/ ?	,	ALT	



Reference:

<http://www.vogella.de/articles/AndroidLocationAPI/article.html>

<http://econym.org.uk/gmap/>

<http://code.google.com/android/add-ons/google-apis/reference/com/google/android/maps/package-tree.html>

<http://www.javaeye.com/wiki/topic/713050>

<http://fzlihui.javaeye.com/blog/713050>

<http://www.williamhua.com/2009/03/30/locationmanager-of-android/>

<http://www.cnblogs.com/jiaozebo/archive/2010/10/18/1855079.html>

<http://www.cnblogs.com/justinprc/archive/2010/10/08/1846153.html>

<http://it.chinawin.net/softwaredev/article-12e58.html>

<http://www.abcfun.cn/n4c12p5.aspx>