LipiTk for Android

lipitk.sourceforge.net

Contents

1 Introduction

LipiTk for Android is the Android version of the open source Lipi Toolkit for handwriting recognition. This version is bundled with recognizers that can recognize discrete hand written upper case, lower case alphabets and numerals (A-Z, a-z and 0-9). App developers can enable their applications with handwriting recognition by integrating with the APIs exposed by LipiTk. This document also describes a sample application that demonstrates the functionality of LipiTk in recognizing handwritten characters. Refer the source code of this sample app to learn more about integrating your app with LipiTk APIs.

In the following sections, you will learn how to install LipiTk on your Android device, how to build sources and how to test your installation using the alphanumeric character recognizer that comes with the package.

1-1 Package contents

lipi-toolkit4.0.1-android.zip comes with the following components:

Component name	**Description**
src/	Source package
LipiTk.apk	Binary package
lipi-toolkit-android_4_0_user_manual.pdf	Documentation

2 Pre-requisites

This section describes the prerequisites for installing and executing LipiTk on Android.

2-1 Supported platforms and environment

LipiTk has been tested on the following Android devices:

- Samsung Galaxy S3

2-2 Software requirements

Item and Description	Windows Vista
Building and executing LipiTk	Eclipse IDE for Java Developers Android NDK (http://developer.android.com/tools/sdk/ndk/index.html) Android SDK (http://developer.android.com/sdk/index.html)

Table 1: Software requirements

3 Installing binary package

Download android version of LipiTk, lipi-toolkit4.0.1-android.zip, from http://lipitk.sourceforge.net and unzip it. After unzip, you will get (1) Binary package (LipiTk.apk) (2) Source package (src/) (3) lipi-toolkit-android_4_0_user_manual.pdf (doc/)

Before initiating install of binary package on an android device, the device needs to be connected to Windows system. Create a new folder on the device and transfer LipiTk.apk to that folder. Once the file is transferred, you can launch LipiTk app by touching LipiTk.apk. An installation prompt asking you to confirm LipiTk app installation appears. Confirm installation by selecting install and LipiTk.apk gets installed on the device.

Note: You may have to change Security settings on your device to enable installation of 3rd party applications. Go to Settings->Security->Device Administration and allow installation of non-Market apps.

Image 1: Before LipiTk.apk install

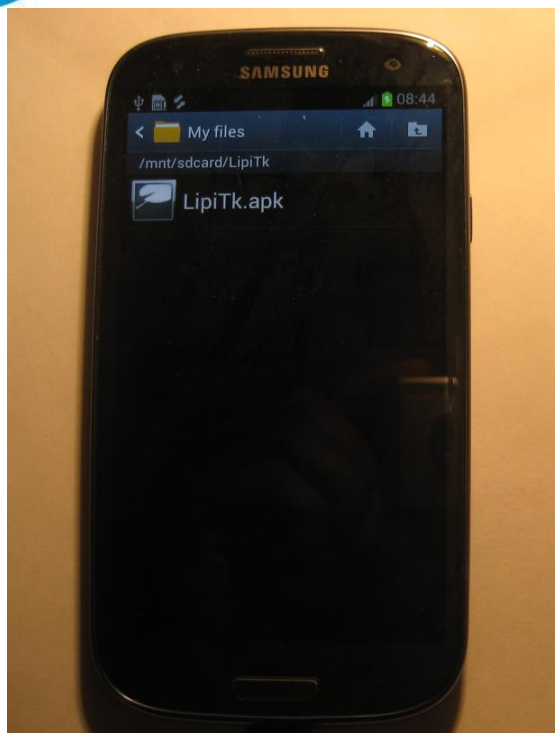

Image 2: LipiTk.apk copied to LipiTk folder

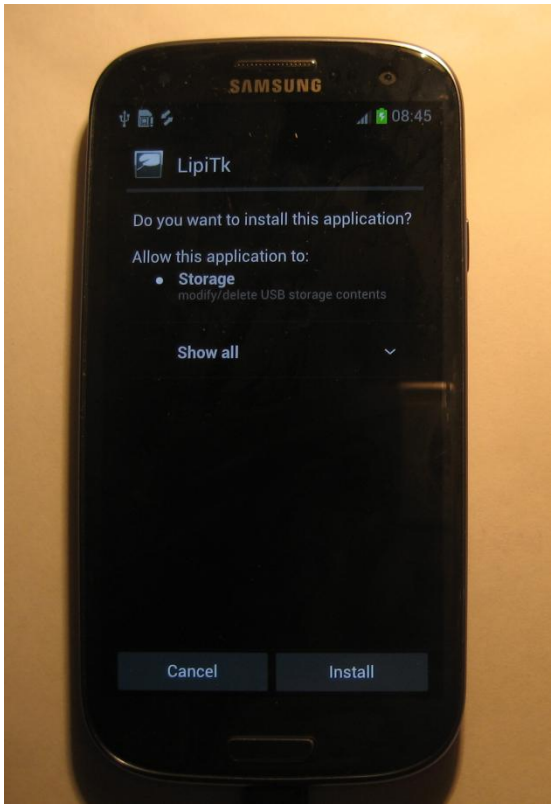

Image 3: Confirmation for the install

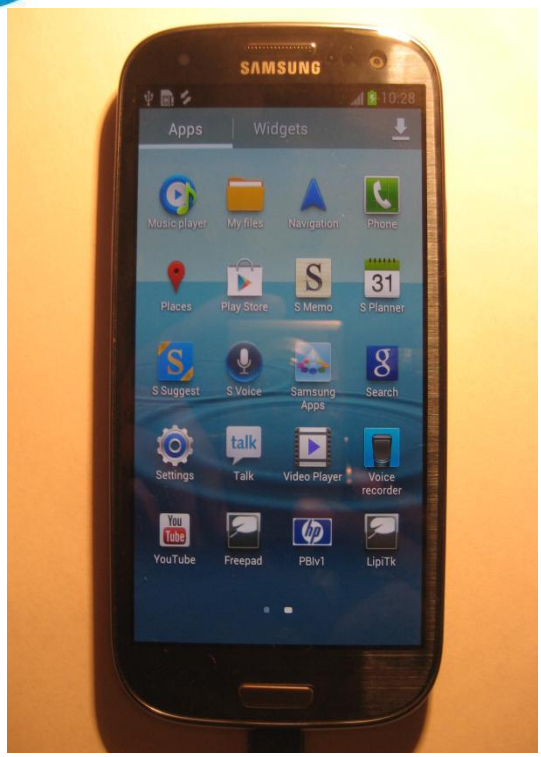

Image 4: After LipiTk.apk install

After LipiTk.apk install, LipTk icon gets displayed on the device and you have to run this application by touching the icon. This will create "com.canvas" folder under "Android/data". The LipiTk user interface application expects alphanumeric character recognizer to be present under "com.canvas". The alphanumeric character recognizer comes with the source package and it gets copied automatically during LipiTk install.

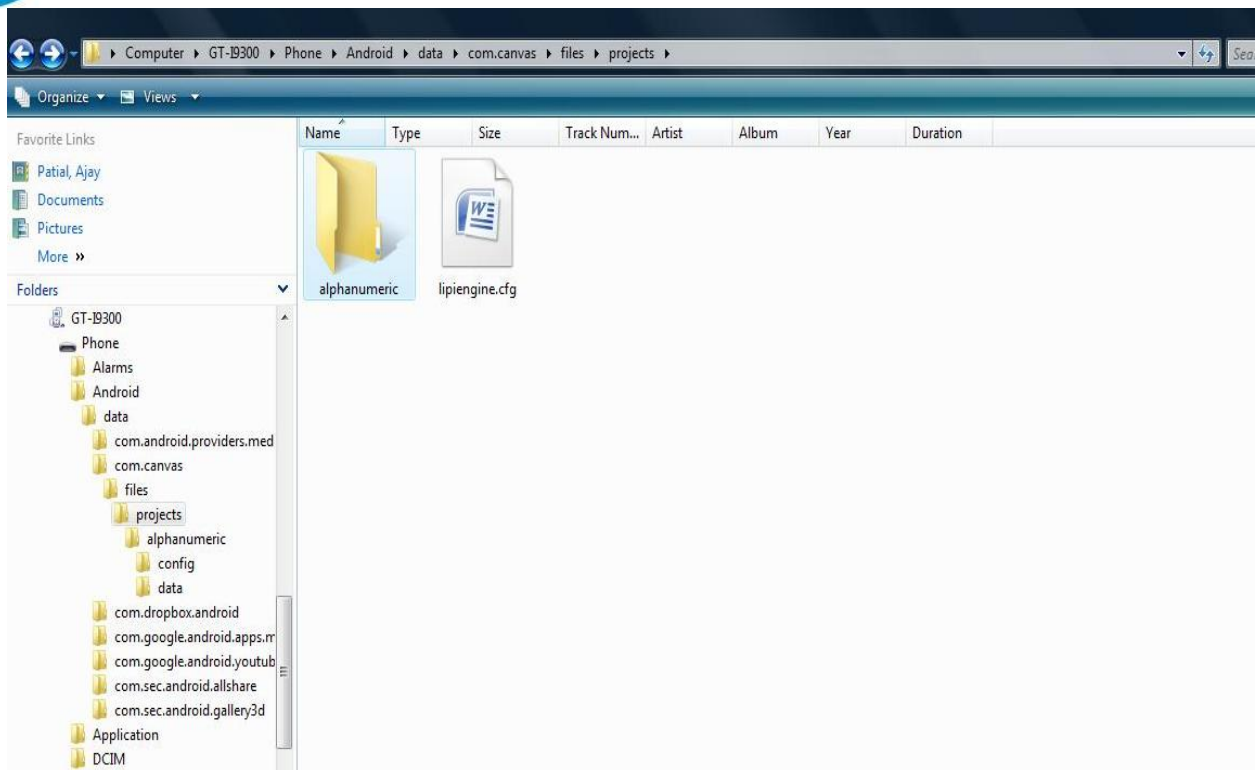

Image 5: Alphanumeric recognizer on the device

After install, you can touch LipTk icon and run the application.

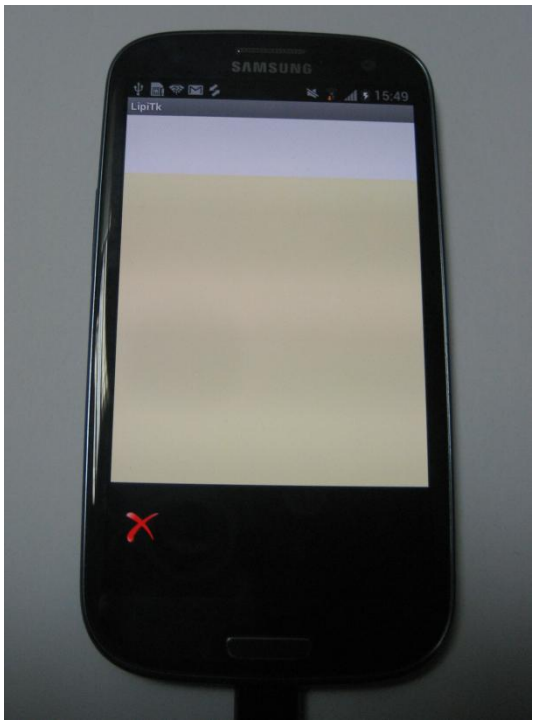

Image 6: LipiTk sample application

In the above LipiTk sample application, yellow strip is the writing area where you can write characters using a finger. The written character gets recognized and it gets displayed on the white strip at the top.

For example, character 'a' gets displayed on recognition as shown below.

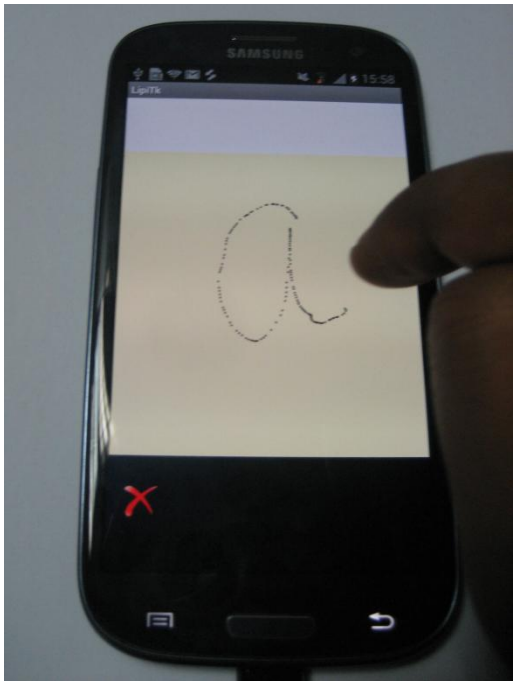

Image 7: Character 'a' being written

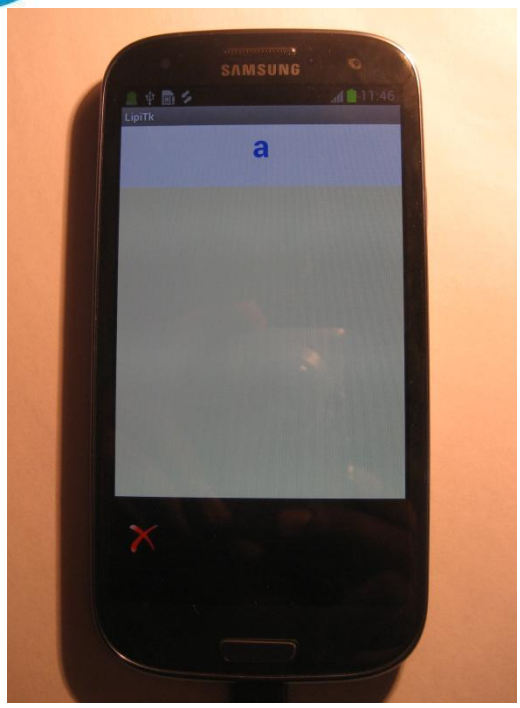

Image 8: Character recognition

Note: The above sample application is made available to demonstrate the functionality of LipiTk in recognizing handwritten characters. You can use this sample source code to develop your own applications that need handwritten character recognition.

4 Building and executing source package

You can import the src/ folder to eclipse as shown below. In this document we do not discuss the details of android development environment setup and it is assumed that you have installed android SDK and android plug-in (ADT) for eclipse.

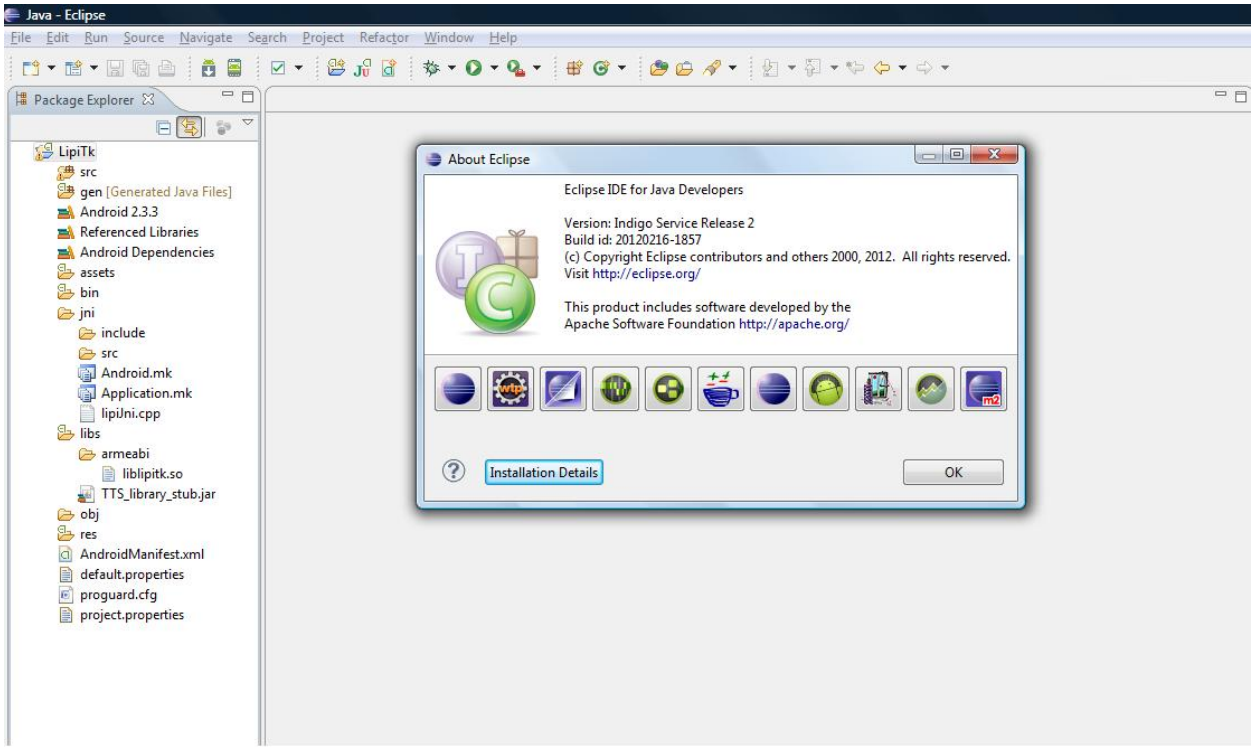

Image 9: Importing LipiTk on eclipse

The source package consists of sample user interface developed in Java and liblipitk.so shared library. This shared library is formed of lipiJni and the ported LipiTk. The Java application interacts with lipiJni which in turn interacts with ported LipiTk to carry out the required operation.

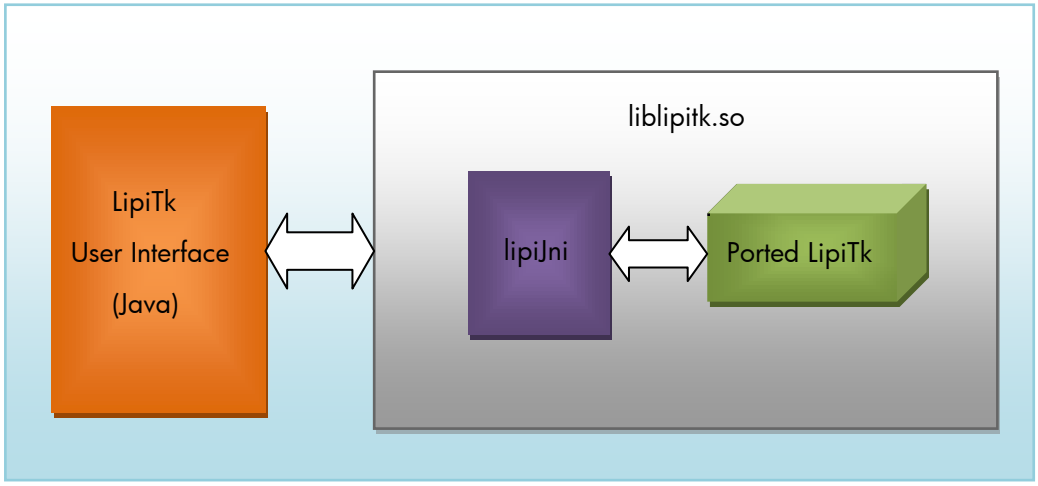

Figure 1: LipiTk.apk

You can develop your user interface and modify lipiJni as per your user interface needs. Once the change is made to lipiJni, liblipitk.so shared library needs to be build with the help of 'ndk-build' utility. On successful build the shared library gets created under 'libs/armeabi' which will be used by your user interface.

Before starting build, you have to specify your source code location against the PATHH variable in Android.mk.

Setting PATHH variable in Android.mk:

```
PATHH := <path of source package>/jni/
```

Once the PATHH variable is set, you can execute ndk-build.

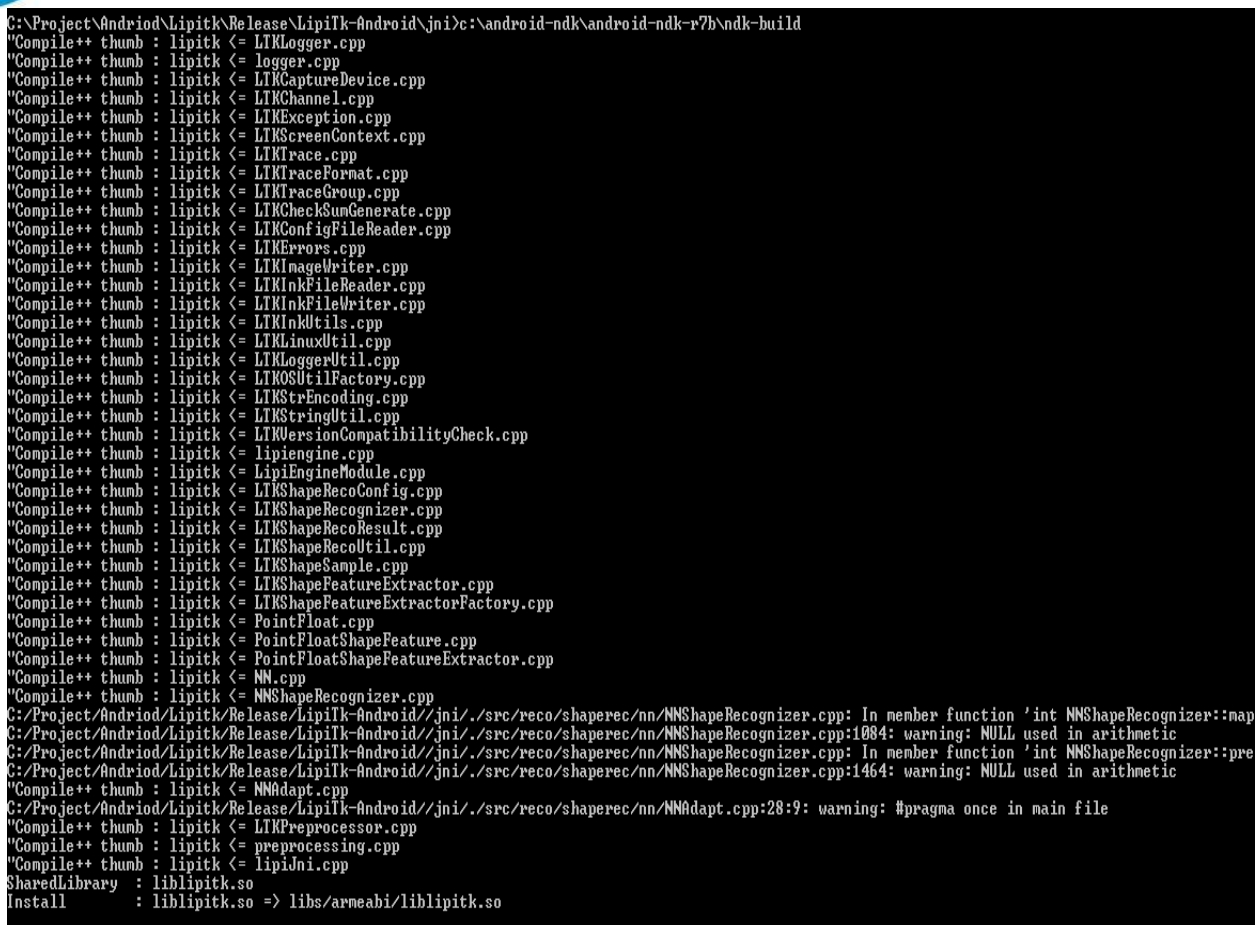

Image 10: Building LipiTk library – ndk-build

After developing the user interface and building lipiJni with LipiTk library using ndk-build, you have to build your java application on eclipse. On successful build, you will get the apk file and then you can run this file from eclipse.

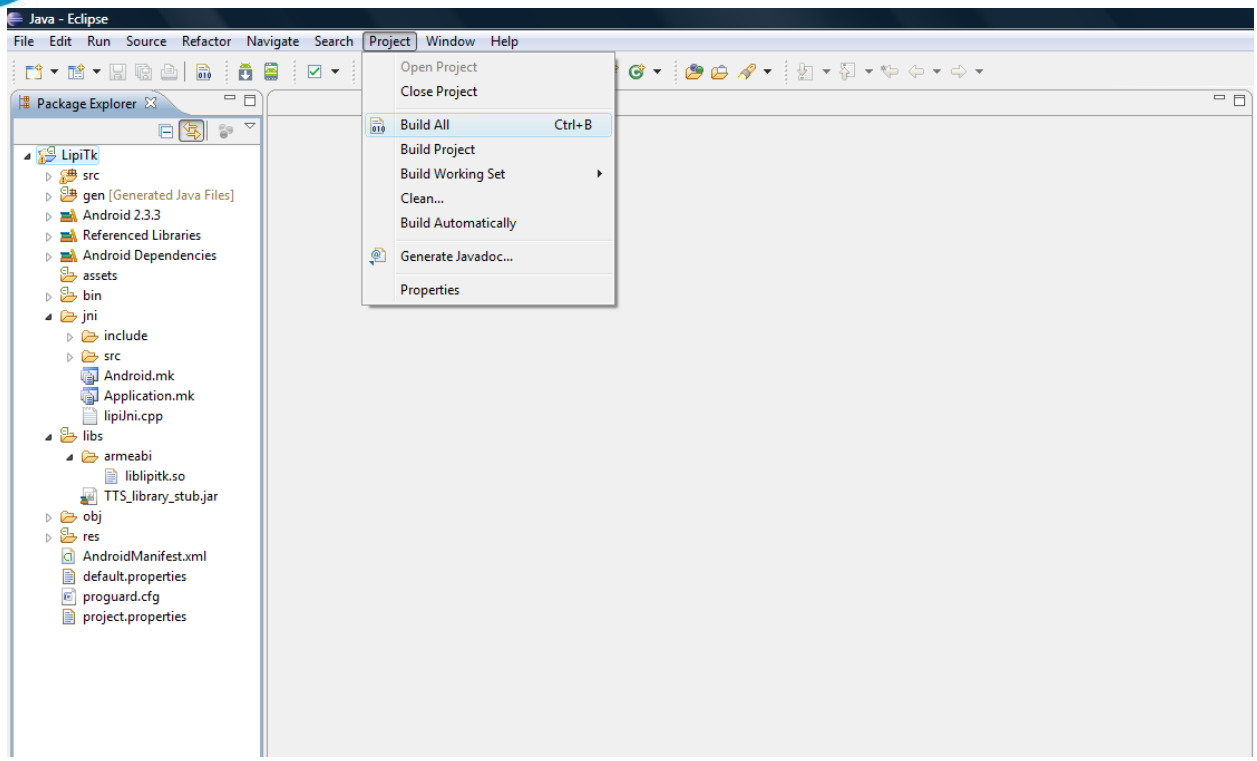

Image 11: Building LipiTk on eclipse

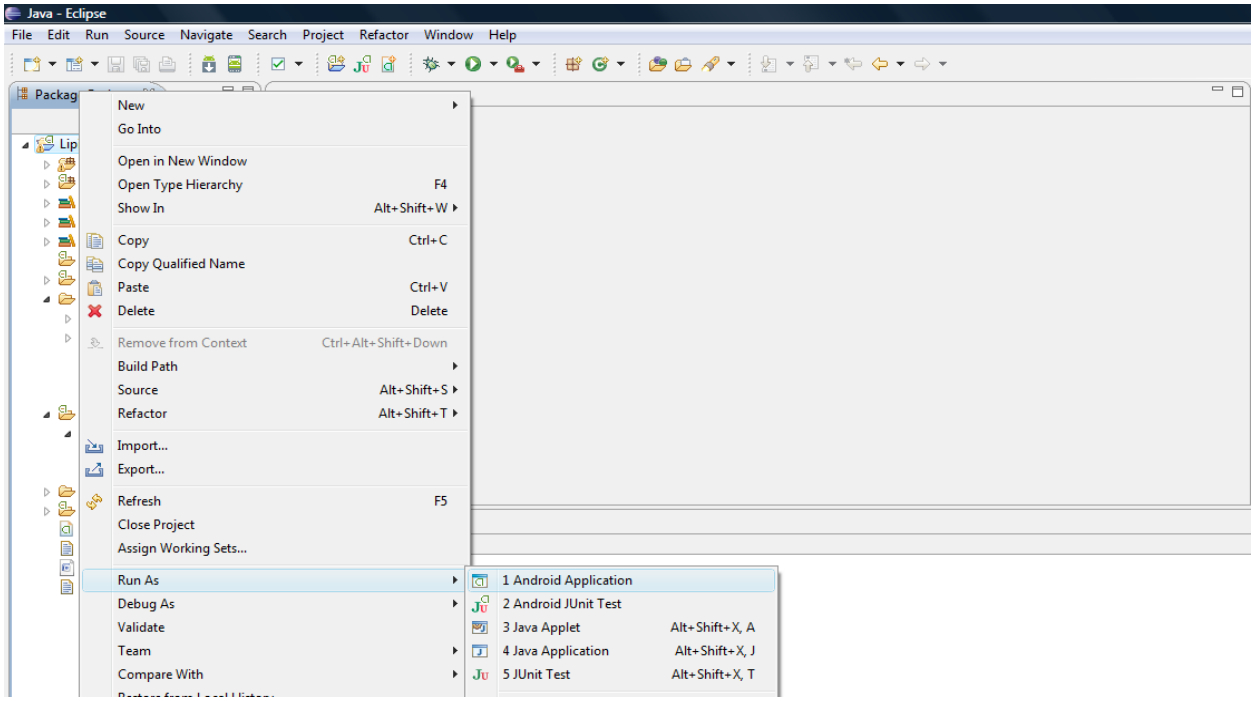

Image 12: Running LipiTk from eclipse

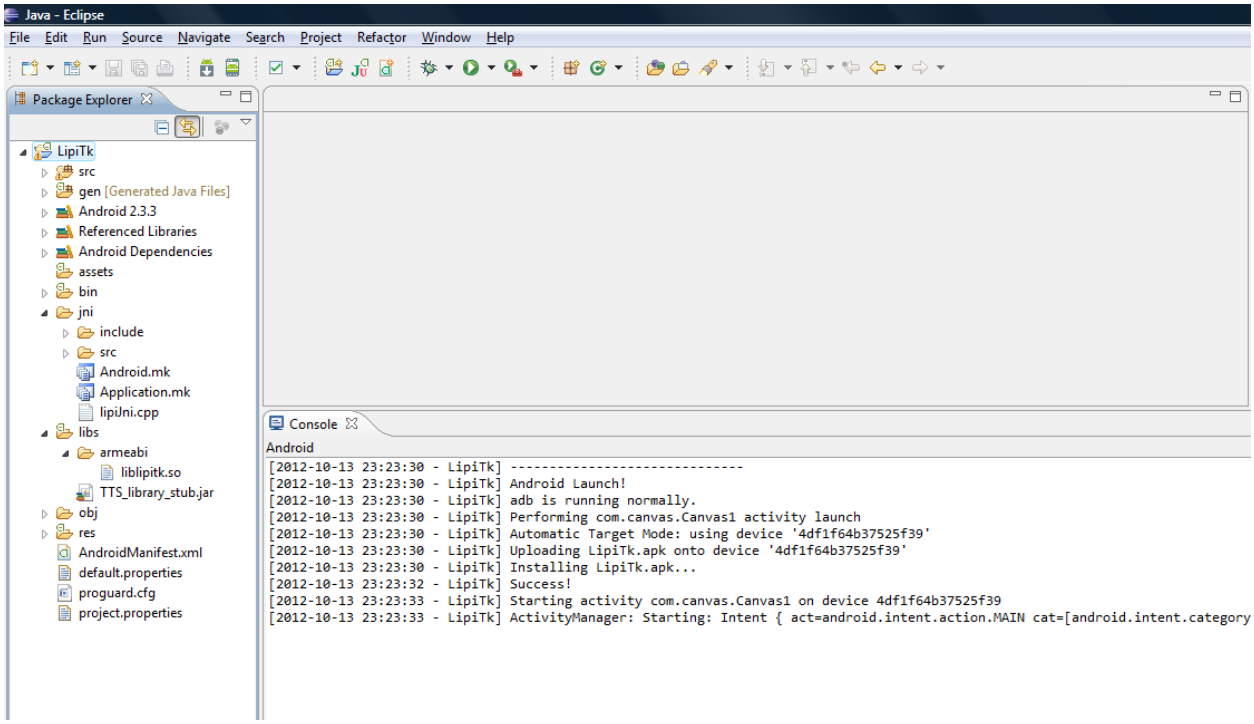

Image 13: LipiTk installed from eclipse

This installs LipiTk.apk on the android device and you will see the successful install message as shown above. After installing LipiTk , you can follow the instructions given under 'Installing binary package' section for running LipiTk.