Create .so Files Using NDK

(Source: Internet)

1. Install ndk-build in window (search and download from the internet)
2. Set “path” environment in window. Suppose
   “C:\Users\PCuser\AppData\Local\Android\Sdk\ndk-bundle”
   is where we install ndk-builder. In window, Control Panel > System > Advanced system settings > Advanced > Environment Variables > System variables > Path > Edit... In the variable value, add “;” and also add “C:\Users\PCuser\AppData\Local\Android\Sdk\ndk-bundle”. Then, click OK.
3. Create a folder with whatever name (for example D:\hello-jni). In the folder “hello-jni”, create a folder named exactly “jni”. In the folder “jni”, add three files, including Android.mk, Application.mk, and hello-jni.c. The content of these files is as follows.

   In the file “Android.mk”

   ```
   LOCAL_PATH := $(call my-dir)
   include $(CLEAR_VARS)
   LOCAL_MODULE    := hello-jni
   LOCAL_SRC_FILES := hello-jni.c
   include $(BUILD_SHARED_LIBRARY)
   # include $(BUILD_EXECUTABLE)
   # Note that LOCAL_MODULE is to set the name of the .so files
   ```

   In the file “Application.mk”

   ```
   APP_CFLAGS += -Wno-error=format-security
   APP_ABI := all
   # APP_ABI := armeabi armeabi-v7a x86
   ```

In the file hello-jni.c

```
#include <string.h>
#include <jni.h>

JNIEXPORT jstring JNICALL
Java_com_example_pcuser_test007_MainActivity_getStringFromJNI(JNIEnv
*env, jobject thisObj) {
  return (*env)->NewStringUTF(env, "Hello from native code!");
}

jstring
Java_com_example_pcuser_test007_MainActivity_getJniString(JNIEnv* env,
jobject thiz){
   return (*env)->NewStringUTF(env, "Hello from JNI! Saurabh");
}

JNIEXPORT jint JNICALL
Java_com_example_pcuser_test007_MainActivity_getIntSqure(JNIEnv* env,
jobject obj,jint value) {
   return value * value;
}

JNIEXPORT jboolean JNICALL
Java_com_example_pcuser_test007_MainActivity_getBooleanMethod(JNIEn
v* env,jobject obj, jboolean unsignedChar) {
   return !unsignedChar;
}
```

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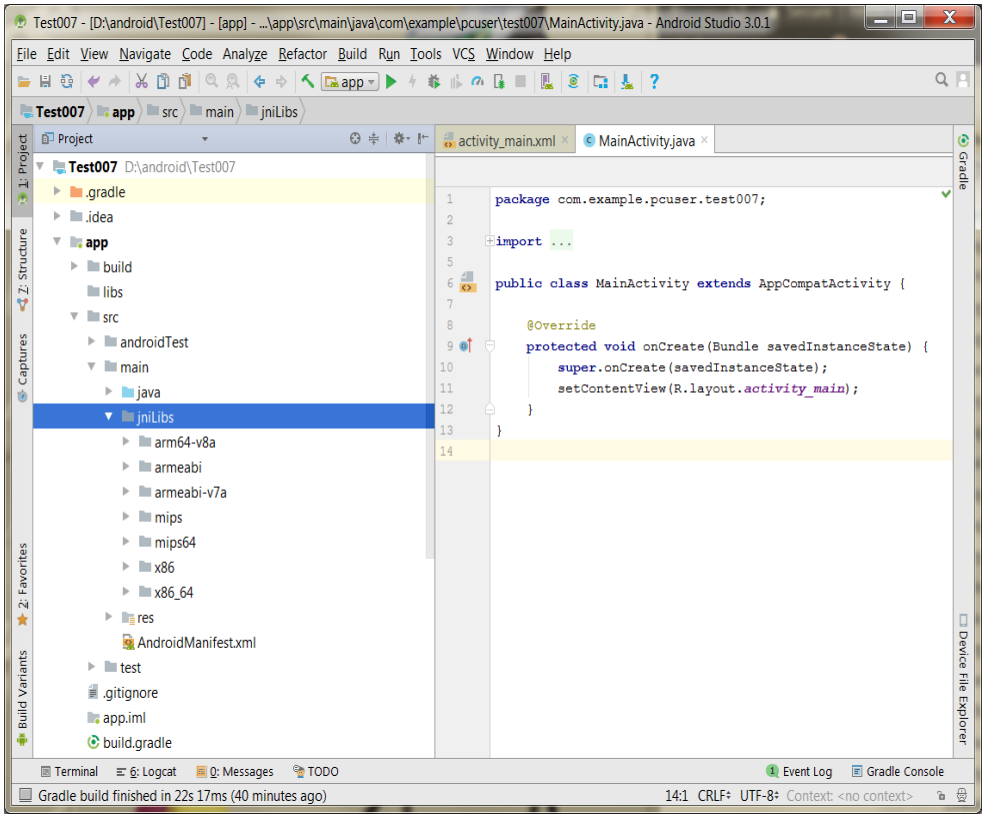
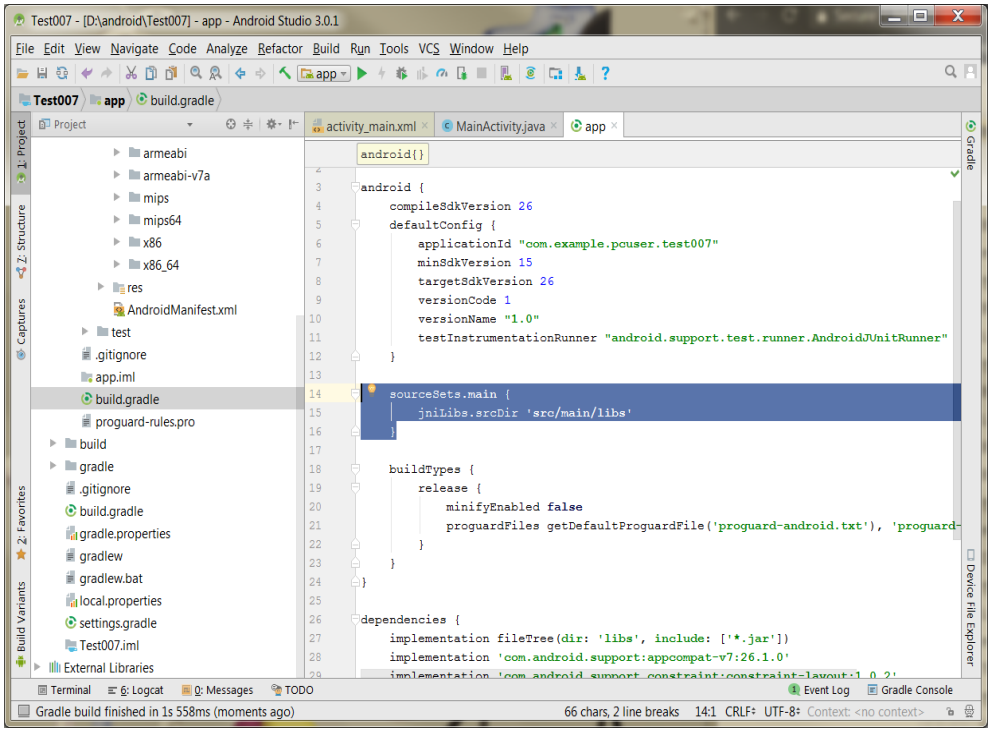
4. Open cmd in window and change to the folder “jni” using the command
   > cd /d D:\android\hello-jni\jni
5. Run ndk-build by the following command
   D:\android\hello-jni\jni> ndk-build

6. The .so files is output in the folder “hello-jni\libs”
7. To use .so files, create a new project in Android Studio. In “Application name”, type “Test007” and in “Company domain”, type “pcuser.example.com”. Then, click “Next” until it is done.
8. In the folder “/src/main/”, create a folder called “jniLibs”. Put the .so files in this folder as the following figure.



9. In the file “build.gradle” add the following lines.

```
sourceSets.main {
        jniLibs.srcDir 'src/main/libs'
}
```



10. Modify the file “MainActivity.java” as follows.

```
package com.example.pcuser.test007;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActivity {

    static {
        System.loadLibrary("hello-jni");
    }

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Log.d("Hello", getStringFromJNI());
    }
    public native String getStringFromJNI();
}
```

11. The result shows as follows.