

BLACK BOX TESTING USING "ROBOTIUM" FOR apk FILES

Requirements :

- 1) Android Application's apk files for Testing. Ex: *ApplicationToTest.apk*
- 2) Eclipse for building Test project
- 3) ADT (Android Development Tools)
- 4) SDK (Software Development Kit)
- 5) JDK (Java Development Kit)
- 6) robotium-solo-1.7.0.jar

Prerequisites for developing test framework:

- * Install eclipse, ADT , SDK, JDK to your system.
- * After installation give proper path in environmental variable

[For more help : <http://developer.android.com/guide/index.html>]

[For downloading robotium-solo-1.7.0.jar and document :
<http://code.google.com/p/robotium/downloads/list>]

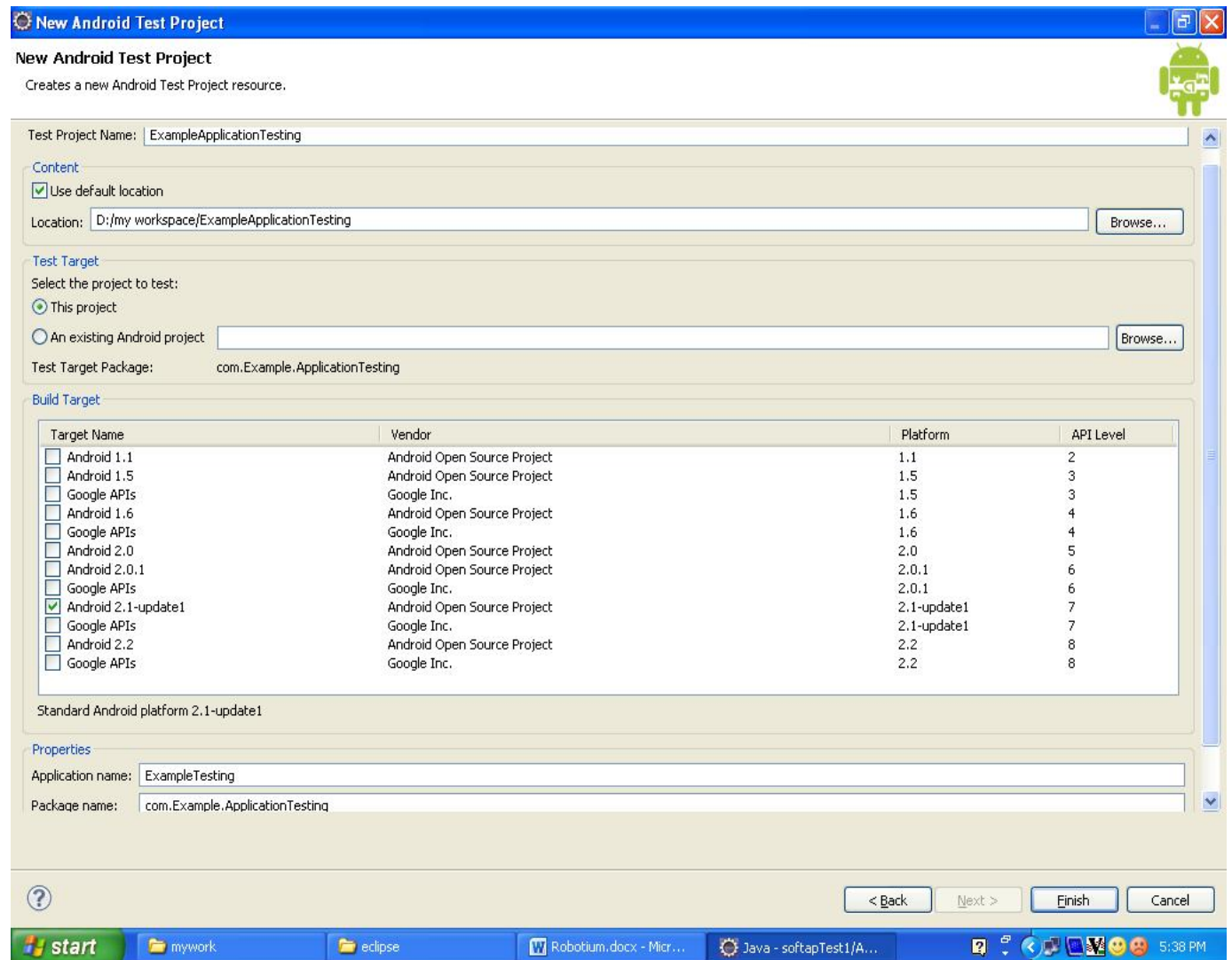
NOTE: In this example the application apk file has the following package name:
“*com.Example.ApplicationToTest*” and the apk name is *ApplicationToTest.apk*

STEP 1: CREATE TEST PROJECT IN ECLIPSE

Create the test project by:

File → New → Project → Android → Android Test Project

The window below will open:



Fill all the following fields to create the test project

* Test Project Name: ExampleApplicationTesting

* Test Target: Click on “This Project “

* Build Target: If the application was developed using SDK version 7 then select Android 2.1 – update1. If it was developed by SDK version 8 then select Android 2.2

* Properties: Application name : ApplicationTesting

Package name: com.Example.ApplicationTesting

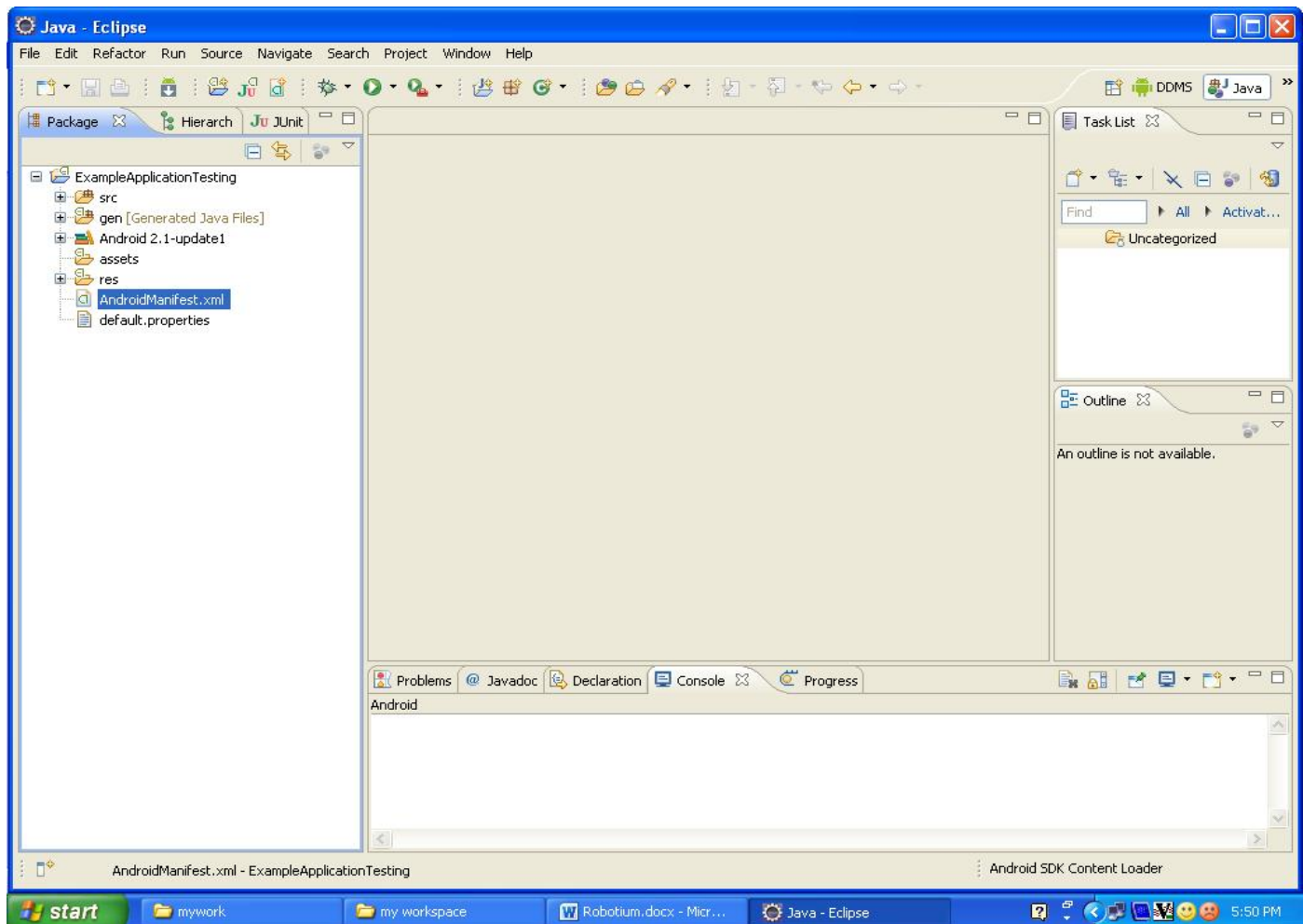
Min SDK version: Default value will be there according to Build Target selection

Then click on “finish”

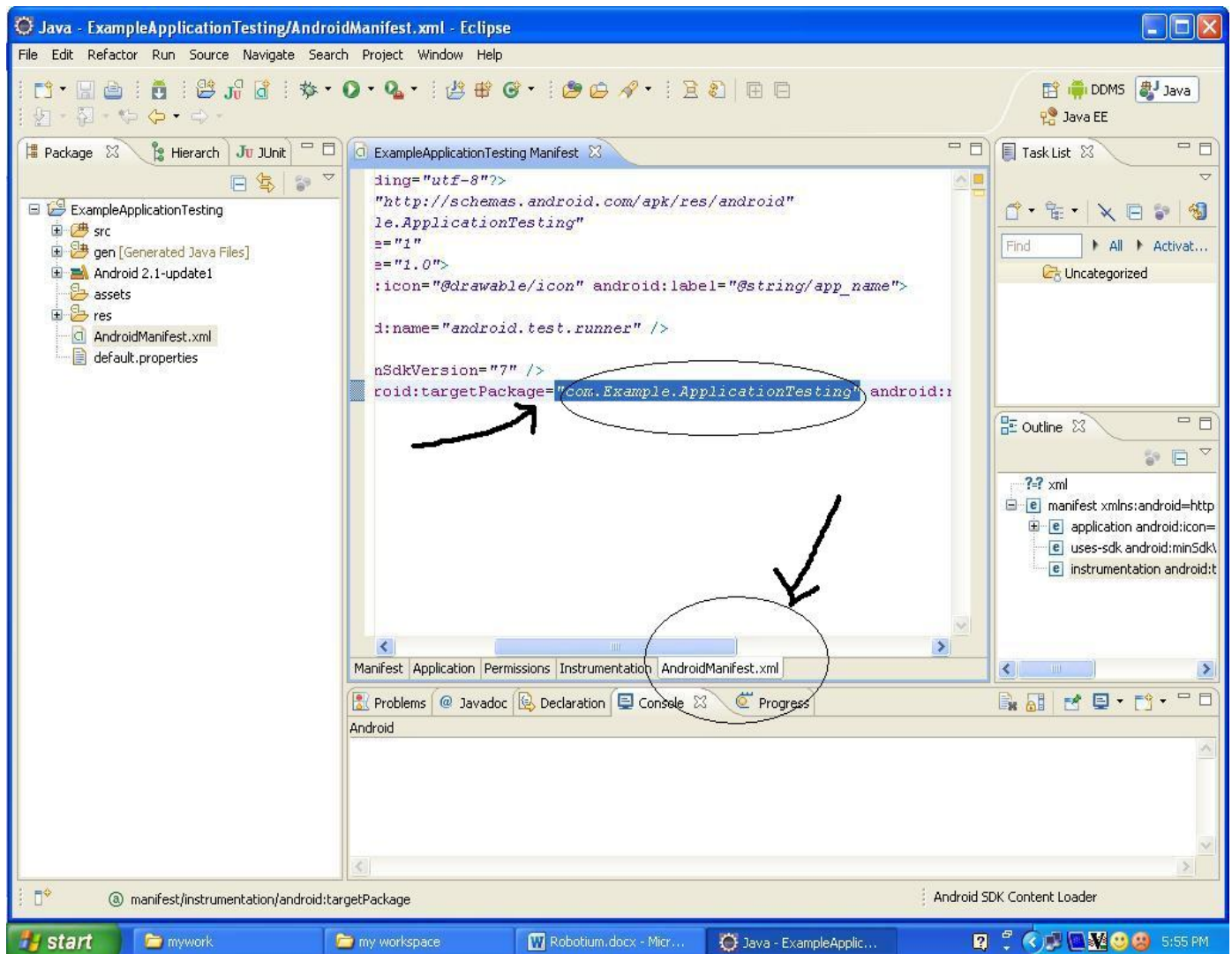
It will create a new project with the name: ExampleApplicationTesting

STEP 2: DO THE FOLLOWING CHANGES IN “AndroidManifest.xml”

* Open package “ExampleApplicationTesting” there you will find the file AndroidManifest.xml



* Open the AndroidManifest.xml



* Change:

`<instrumentation android:targetPackage="com.Example.ApplicationTesting"`

To:

`<instrumentation android:targetPackage="com.Example.ApplicationToTest"`

If you do not know the exact package name then type this in the DOS prompt

> launch the emulator

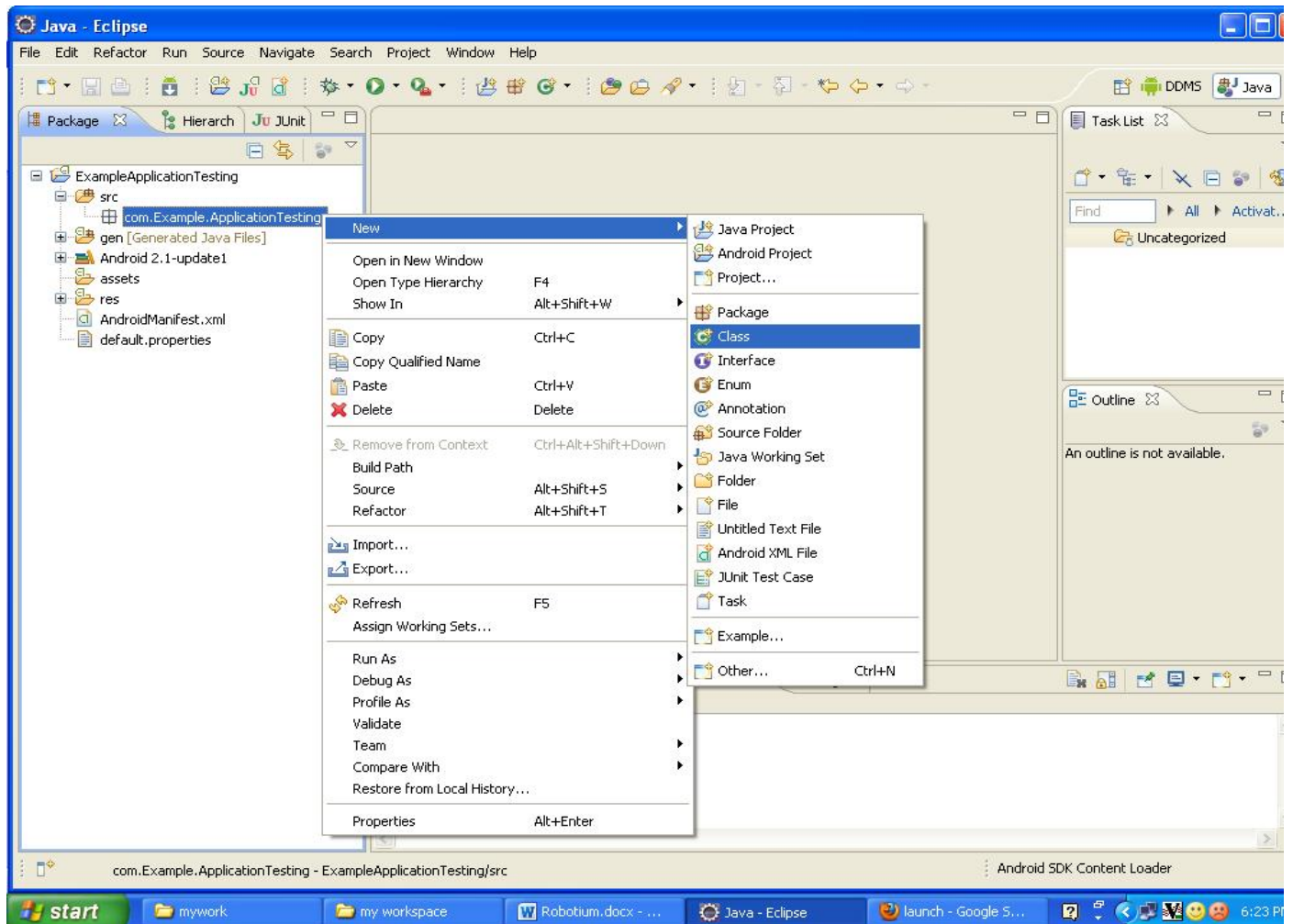
> adb install testapplication.apk

> adb logcat

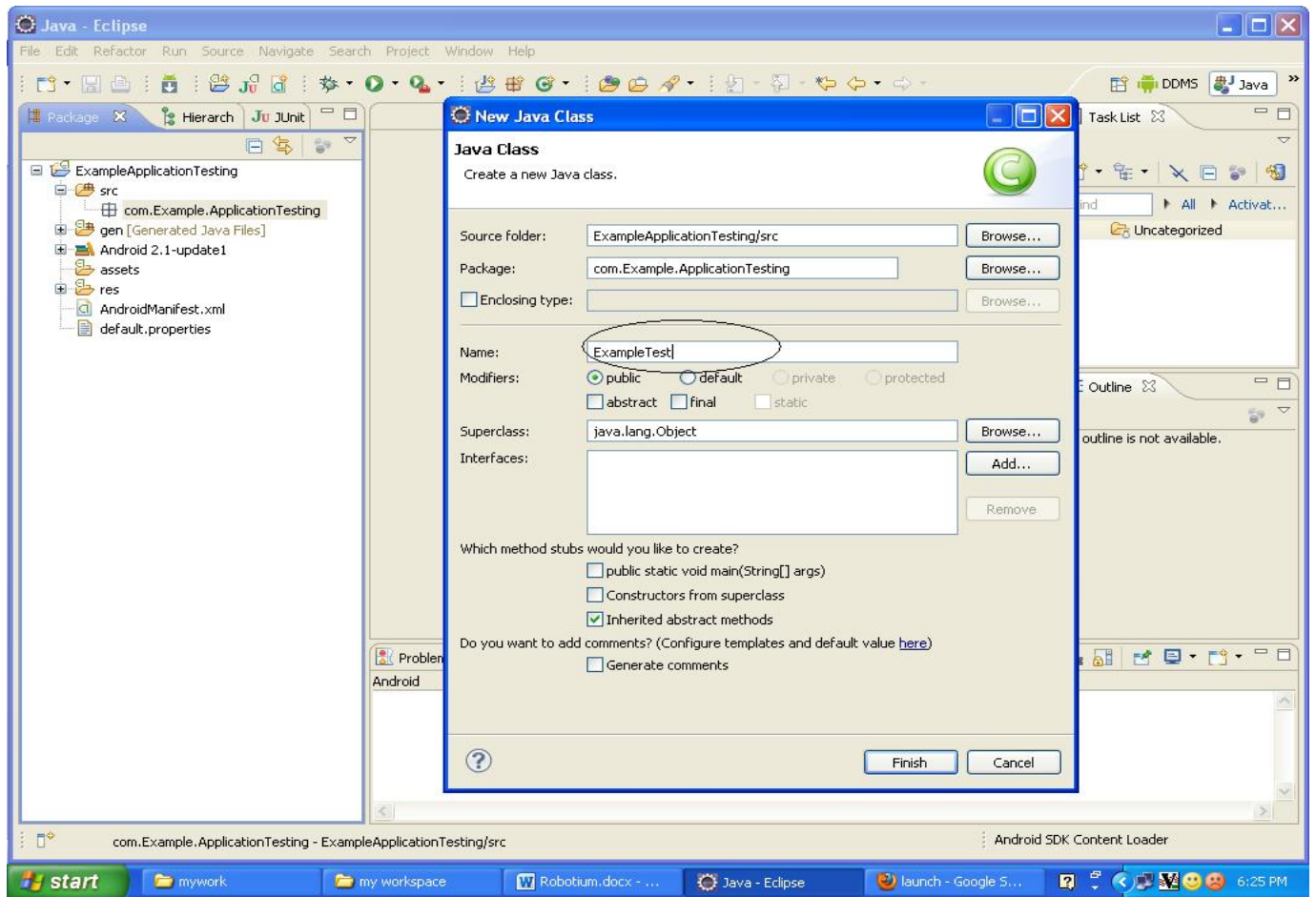
Run the application once and you will get the exact package name

STEP 3: CREATE SAMPLE TEST CASE

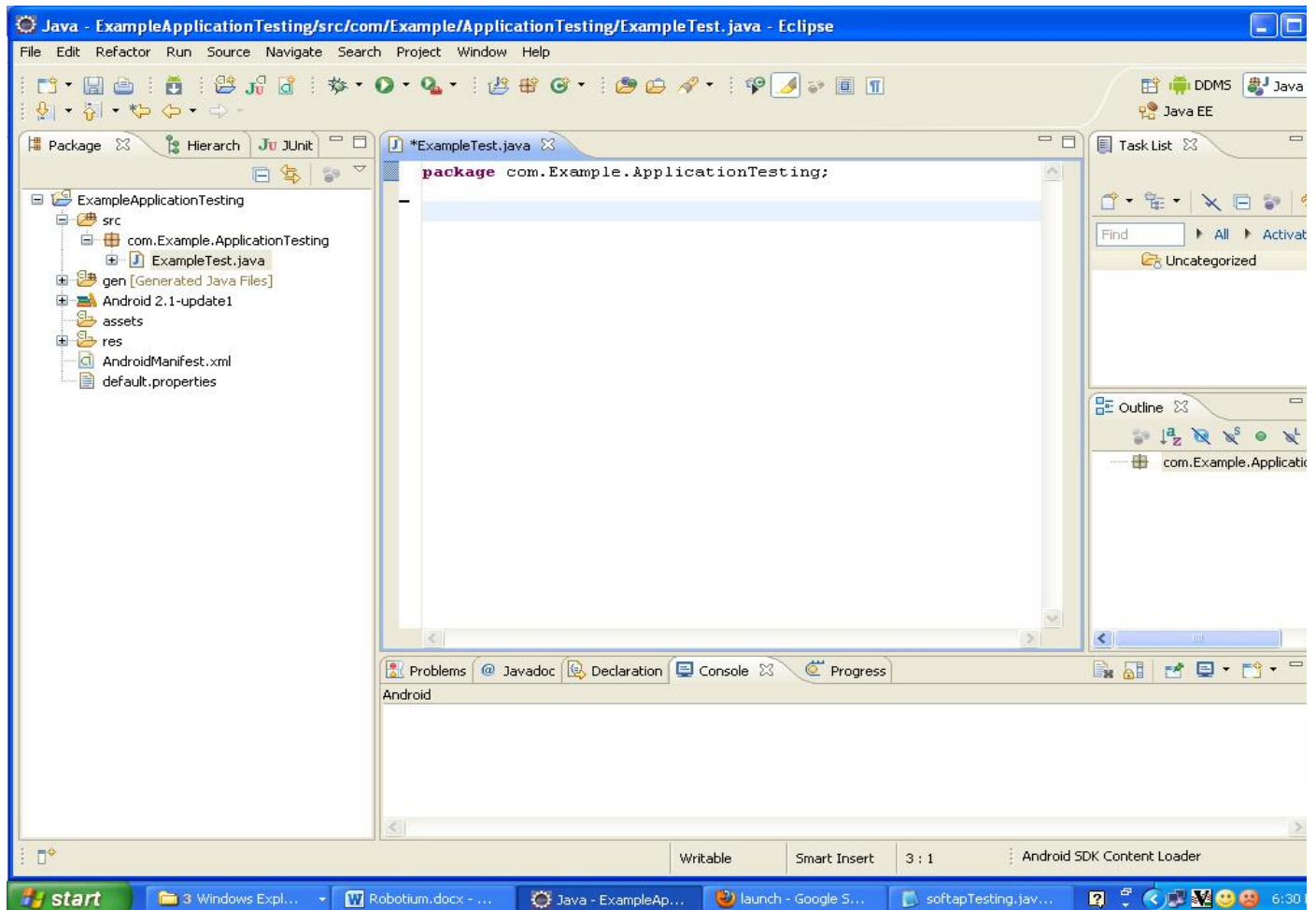
* Select the package and right click it and select: New → Class



* Use the class name: ExampleTest and click on “finish”



* Now the editor should look like:



* Copy this code into the editor:

```
import com.jayway.android.robotium.solo.Solo;
```

```
import android.test.ActivityInstrumentationTestCase2;
```

```
@SuppressWarnings("unchecked")
```

```
public class ExampleTest extends ActivityInstrumentationTestCase2 {
```

```
    private static final String TARGET_PACKAGE_ID = " com.Example.ApplicationToTest ";
```

```
    private static final String LAUNCHER_ACTIVITY_FULL_CLASSNAME = "
```

```
com.Example.ApplicationToTest.MainMenuSettings";
```

```
    private static Class<?> launcherActivityClass;
```

```
    static{
```

```
        try {
```

```
            launcherActivityClass = Class.forName(LAUNCHER_ACTIVITY_FULL_CLASSNAME);
```

```

} catch (ClassNotFoundException e) {
throw new RuntimeException(e);
}
}

@SuppressWarnings("unchecked")
public ExampleTest() throws ClassNotFoundException {
super(TARGET_PACKAGE_ID, launcherActivityClass);
}

private Solo solo;

@Override
protected void setUp() throws Exception {
solo = new Solo(getInstrumentation(), getActivity());
}

public void testCanOpenSettings(){
solo.pressMenuItem(0);

}

@Override
public void tearDown() throws Exception {

try {
solo.finalize();
} catch (Throwable e) {
e.printStackTrace();
}
getActivity().finish();
super.tearDown();

}

```

NOTE:

```
private static final String TARGET_PACKAGE_ID = " com.Example.ApplicationToTest ";
```



```
private static final String LAUNCHER_ACTIVITY_FULL_CLASSNAME = "  
com.Example.ApplicationToTest.MainMenuSettings";
```

here " com.Example.ApplicationToTest " is the package name.

"MainMenuSettings" is the launcher activity name. It should look like this:

```
private static final String LAUNCHER_ACTIVITY_FULL_CLASSNAME =packagename.launchername
```

If you do not know the exact package and launcher names follow these steps in the DOS prompt

> launch the emulator

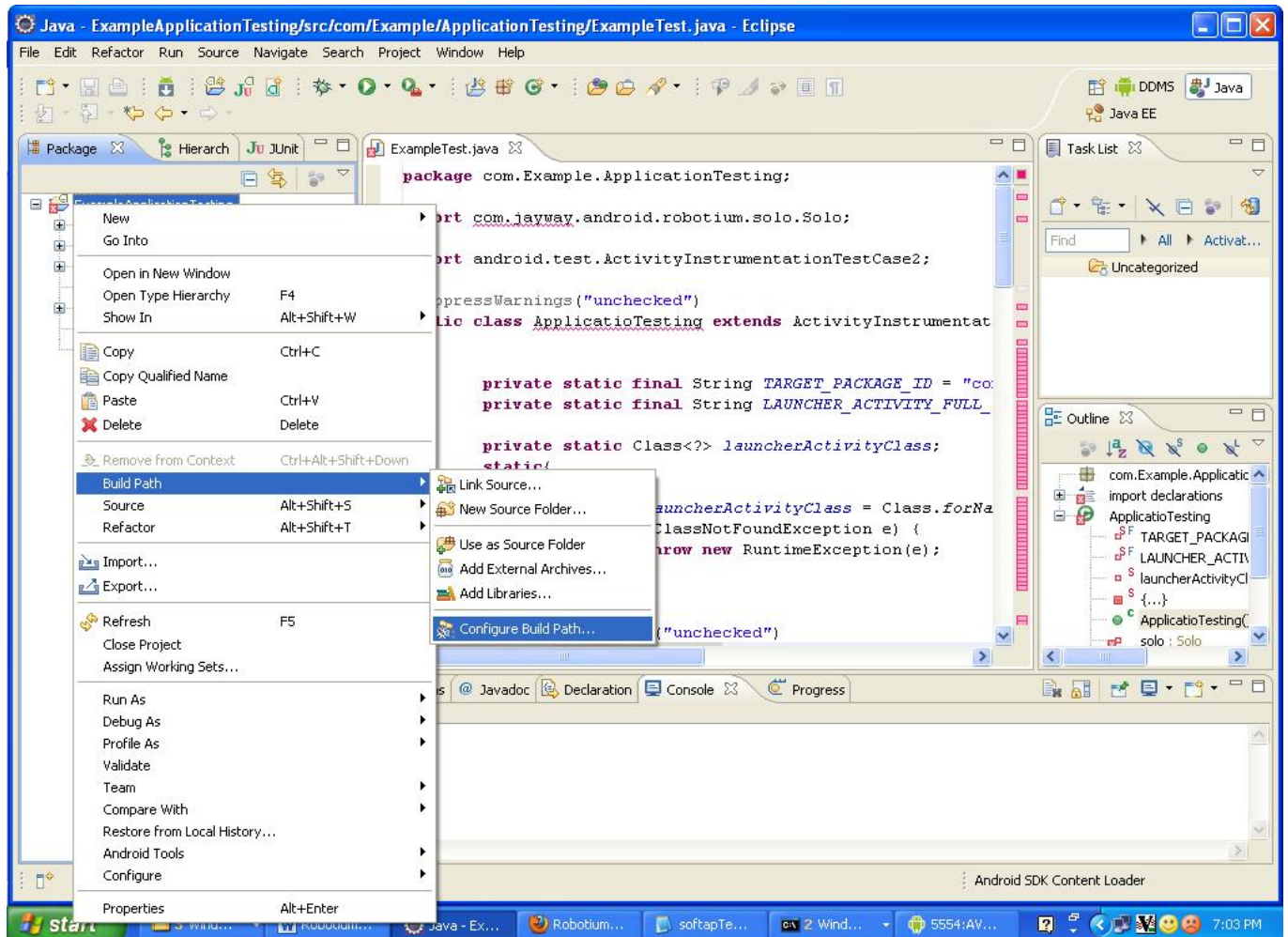
> adb install testapplication.apk

> adb logcat

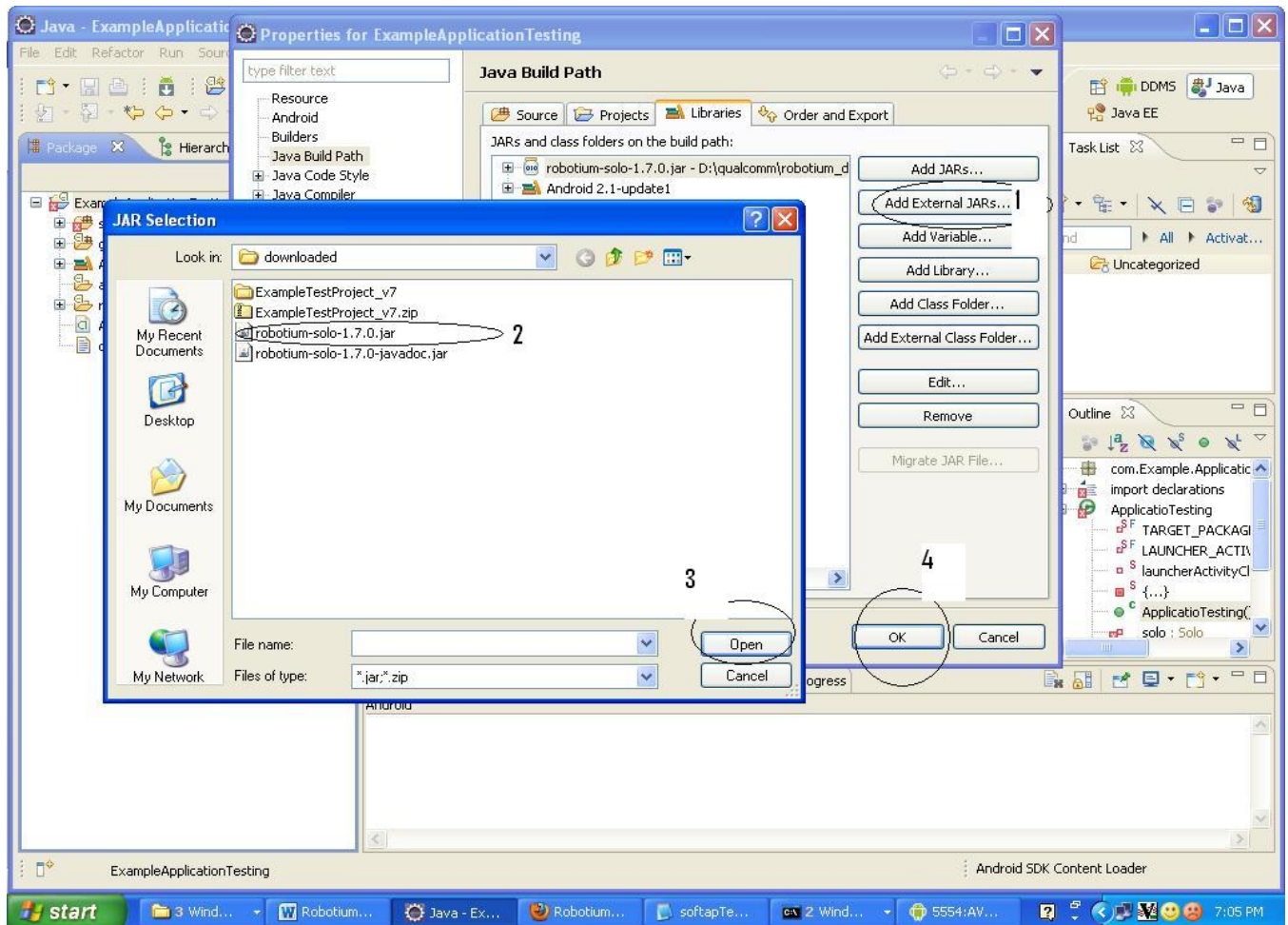
There you will get exact package name and launcher name

* Include the robotium jar file to the project

Right click on "ExampleApplicationTesting" project → Build path → Configure Build Path



* Then select *add External Jars* → *select robotium jar file* → *open* → *OK*



STEP 4: The .apk file has to have the same signature as your test project

Signature:

The signature will identify the author of the android application. Signature means it contains the information like first name and last name of the developer, Name of the organizational unit, organization, city, state , two letter country code.

Standard tools like Keytool and Jarsigner are used to generate keys and sign applications.

[For more help: <http://developer.android.com/guide/publishing/app-signing.html>]

IMPORTANT STEPS:

- * If you know the certificate signature then you need to maintain the same signature in your test project
- * If you do not know the certificate signature then you need to delete the certificate signature and you should maintain the same android debug key in both the application and test project
- * If the application is unsigned then you need to sign the application apk with the android debug key

If it is a signed application then:

You can use the following bash script : <http://robotium.googlecode.com/files/sign-debug-any-apk.sh>

Or

-- Un-zip the apk file

-- Delete the META-INF folder

-- Rezip the apk file

-- In Dos prompt /Command prompt

```
> jarsigner -keystore ~/.android/debug.keystore -storepass android -keypass android ApplicationToTest.apk androiddebugkey
> zipalign 4 ApplicationToTest.apk TempApplicationToTest.apk
```

Then rename TempApplicationToTest.apk to ApplicationToTest.apk

If it is an unsigned application then:

-- In Dos prompt /Command prompt

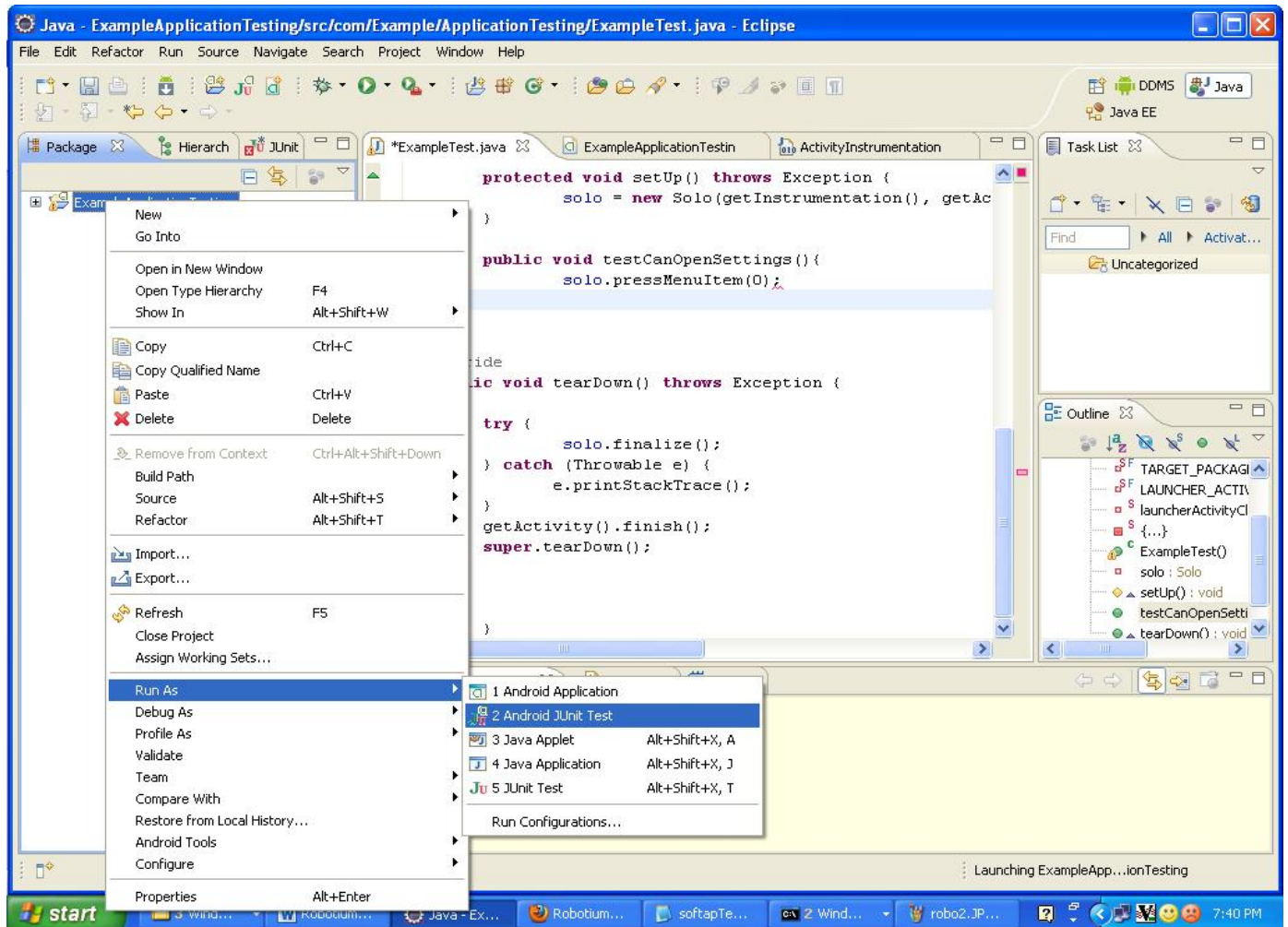
```
> jarsigner -keystore ~/.android/debug.keystore -storepass android -keypass android ApplicationToTest.apk androiddebugkey
> zipalign 4 ApplicationToTest.apk TempApplicationToTest.apk
```

Then rename TempApplicationToTest.apk to ApplicationToTest.apk

[For more help : <http://developer.android.com/guide/publishing/app-signing.html>]

STEP 5: RUN THE SAMPLE TEST CASES

Right click on the test project → Run As → Android JUnit Test



STEP 6: RUNNING TEST CASES ON THE EMULATOR/DEVICE WHEN NOT USING ECLIPSE

* Install application apk file using adb shell

> adb install ApplicationToTest.apk

* Install Test project apk file using adb shell

> adb install ExampleTesting.apk

* Run Test cases

adb shell am instrument -w com.Example.ApplicationTesting/android.test.InstrumentationTestRunner