Quick Start on Android

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Before we jump into the Android world, let us have a quick review about Android installations, project creations, and application executions. Introduce the process of in- stalling Android and creating an Android project in this chapter. Main contents include:

Installing Java

Installing integrate development environment Installing

Android SDK

Creating an Android application project Creating an

Android Virtual Device

Running an Android application on the emulator Running an

Android application on a real phone

2.1 INSTALLING JAVA

The Android Software Development Kit (SDK) can work on any oper- ating system, such as Windows, Linux, and Mac OS X. Before starting our installing Android and coding programs, we need to install Java. All the Android development tools require Java, and programs will be using the Java language. From the latest version of the Android Developer website, we suggest that Java 7 or 8 is the best choice.

We recommend getting the Java runtime environment (JRE) 8 from http://java.com/en/download/manual.jsp. For Windows users, there are two kinds of versions offered, which are 32-bit and 64-bit. You can choose the 32-bit download to use with a 32-bit browser, and choose the 64-bit download to use with a 64-bit browser. For Mac OS users, there is only one choice, which needs Mac OS X 10.7.3 version and above. For Linux users, there are four choices, and users can download one of them based on users' operating system.

It is not enough to just have a JRE, and you need the full develop- ment kit. We recommend downloading *Java Development Kit* (JDK) 8 from http://www.oracle.com/technetwork/java/javase/downloads/jdk8- downloads-2133151.html. To verify you have the right version, go to your shell window or terminal and type in "java ?version". The result should be something similar to what is shown in Fig. 2.1.

```
C:\>java -version
java version "1.8.0_25"
Java(TM) SE Runtime Environment (build 1.8.0_25-b18)
Java HotSpot(TM) 64-Bit Server VM (build 25.25-b02, mixed mode)
```

Figure 2.1 Verify the version of Java.

2.2 INSTALLING INTEGRATE DEVELOPMENTENVIRONMENT

A Java development environment is recommended to make Android programming easier. There are many optional *Integrate Development Environments* (IDE), but we only introduce the most widely used one, which is Google's Android Studio.

Android Studio is the official IDE for Android application develop- ment. You can download it from http://developer.android.com/sdk/ index.html. After downloading and installing Android Studio, you can see a similar screen figure, as shown in 2.2, when you open it.

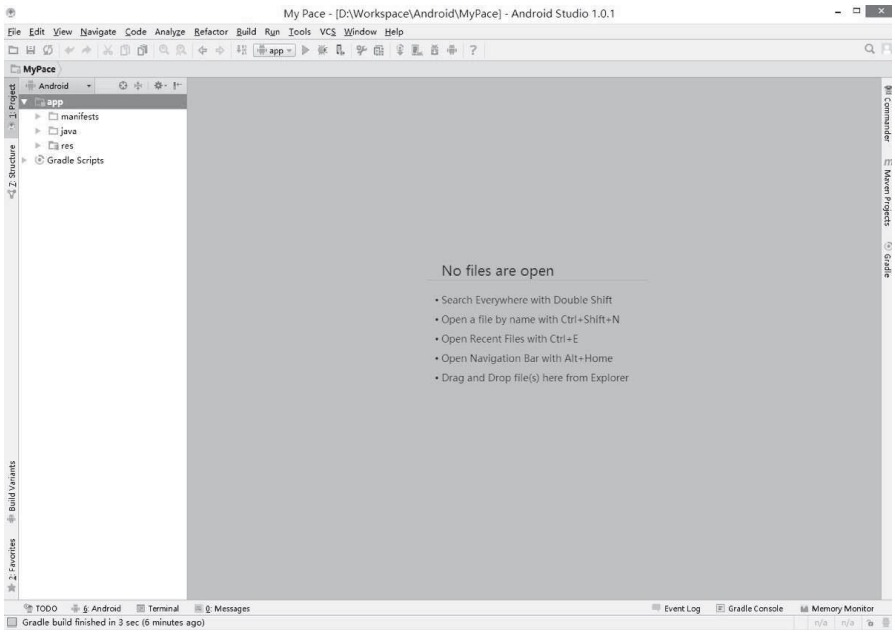

Figure 2.2 Blank interface of Android Studio.

2.3 INSTALLING ANDROID SDK

The Android SDK includes a comprehensive set of development tools. These tools include a debugger, libraries, a handset emulator, documen- tation, sample code, and tutorials. Using the installed IDE, Android SDK can be downloaded and installed conveniently.

In Android Studio, on the top of the screen, select the Tools menu, then Android, and then SDK Manager (Tools → Android → SDK Man- ager), as shown in Fig. 2.3. Then we can see the interface of Android SDK Manager, similar to Figure 2.4.
Install Android SDK Tools, Android SDK Platform-tools, at least one Android SDK Build-tools, and at least one Android API, as shown in Fig. 2.5. API is a set of routines, protocols, and tools for building software applications. The Android 5.0.1 (API 21) is the newest version of Android SDK. We suggest installing Documentation for An- droid SDK, SDK Platform, ARM EABI v7a System Image, and Google APIs. The documentation for Android SDK can help solve programming problems. The ARM EABI v7a system image is a virtual mobile operating system image running on virtual devices.

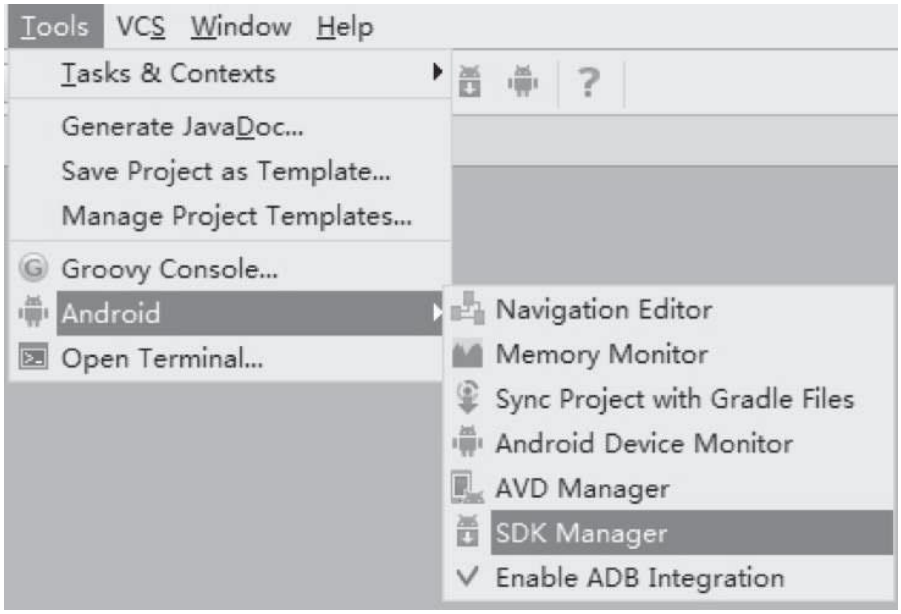

Figure 2.3 Android SDK Manager in Android Studio.

2.4 CREATING AN ANDROID APPLICATION

After installing the Android SDK, we can create our first Android Application.

On the top left corner of the Android Studio, select File, and then New Project

(File → New Project). You will see the "Create New Project" dialog. In the first step of creating a new Android ap- plication, type in the application name, such as "My Application," as shown in Fig. 2.5. You can type in company domain, such as "my.android.example.com". Furthermore, you can choose a directory to store your Android project.

In the second step of creating a new Android application, you can choose which kind of device your application runs on. You can choose more than one device, such as phone and tablet, TV, and Wear. In this Android application, only select "Phone and Tablet", as shown in Fig. 2.6.

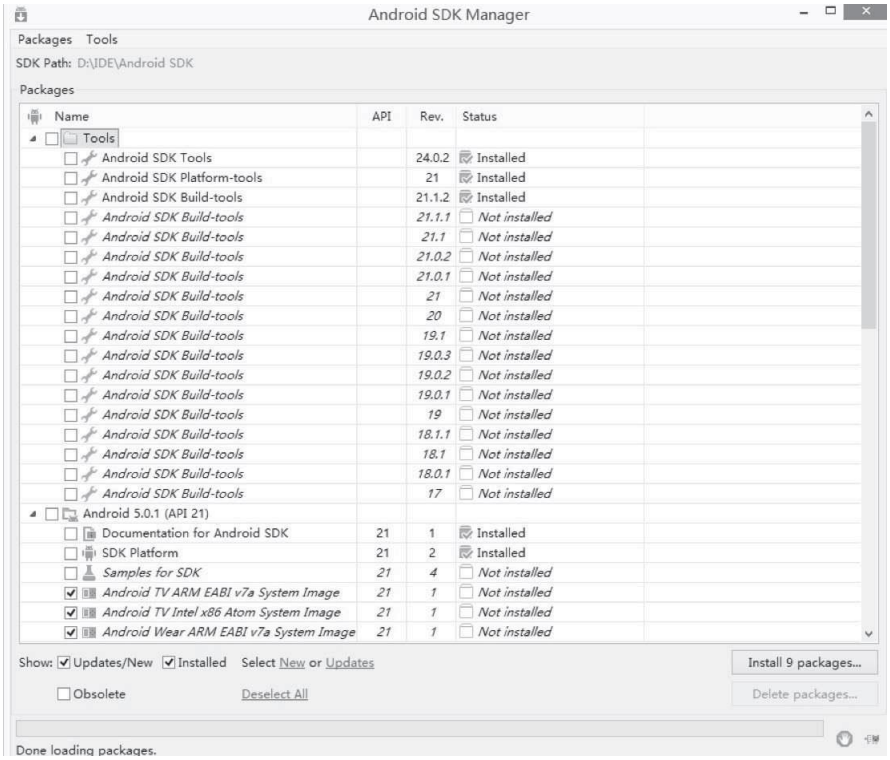

Figure 2.4 Details of Android SDK Manager in Android Studio.

In the third step of creating a new Android application, you can add an activity to your Android application, and you have many choices, such as blank activity, blank activity with fragment, fullscreen activity, Google maps activity, login activity, navigation drawer activity, setting activity, and tabbed activity, as shown in Fig. 2.7. In the latest version of Android Studio, fragment was integrated into activity.

In the last step of creating a new Android application, you can change the name of

the activity added in the third step, as shown in Fig. 2.8. Then click “finish,” the interface of Android Studio will be similar to Fig. 2.9.