



안드로이드 개요 및 개발 환경 구축





구성 내용



- 안드로이드 개요
- 개발 환경 구축
 - ◎ JDK 설치
 - ◎ Android studio 설치
 - ◎ 환경 구축





안드로이드 개요(1) - 스마트폰 개요



- 통화 기능을 넘어선 컴퓨터의 역할 + 휴대기기
장점과 특징

- 스마트폰 역사

- ✓ 1992년 IBM사의 사이먼 (최초)
- ✓ 1996년 노키아 9000
- ✓ 2002년 마이크로소프트 포켓PC
- ✓ 2007년 아이폰
- ✓ 2008년 안드로이드 폰
- ✓ 2009년 Bada 폰
- ✓ 2010년 윈도우폰7



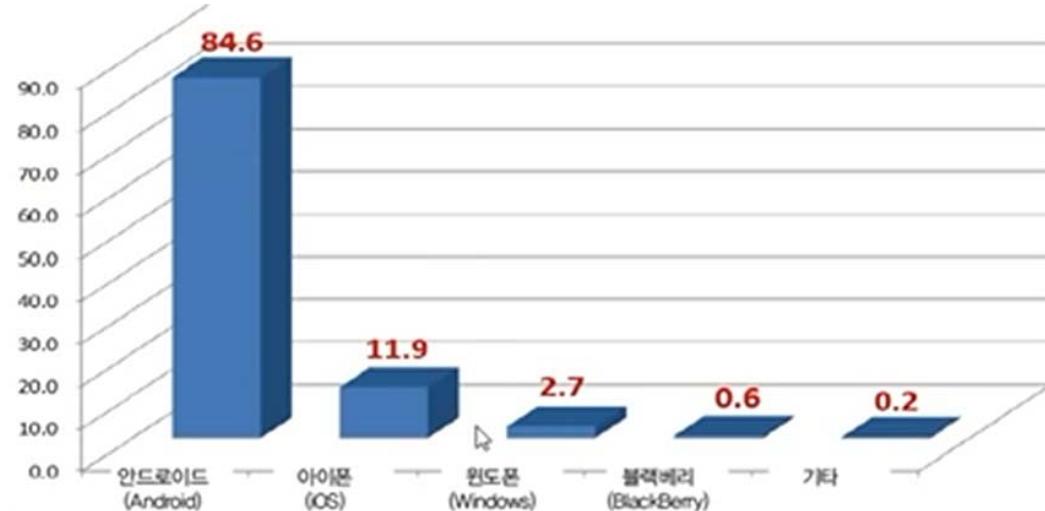


안드로이드 개요(2) - 스마트폰 운영체제



○ 세계시장 점유율

◉ 안드로이드폰 84%, 아이폰 11%, 윈도폰 2%





안드로이드 개요(3) - 의미



○ 안드로이드

◎ 인조인간을 의미

- 사용자를 위해 여러 가지 심부름을 대신해 준다는 뜻
- 모바일 환경에 적합한 운영체제

2007년 11월 5일 구글의 주도하에 OHA(Open Handset Alliance) 결성
: 개방된 모바일 환경을 위한 하드웨어, 소프트웨어 업체의 공동 연합
으로써 약 30여개의 쟁쟁한 업체가 가입

OHA에서 비독점 플랫폼을 지향하며 그 결과로 만들어진 것이 안드로이드





안드로이드 개요(4) - 역사



2005.07

개발 시작

2007.11

안드로이드 첫 버전 릴리즈

2008.10

최초의 상용 안드로이드폰인 HTC의 G1 발표

2010.02

국내에 모토로라의 모토로이 발매 시작으로 본격적인 상용화





안드로이드 개요(5) - 버전



2014 ~ 2015 → 롤리팝 OS 업그레이드, 안드로이드 스튜디오
공식 개발도구로 전환





안드로이드 개요(6) - 주요기능



주요 기능

- ❖ 애플리케이션 프레임워크를 통해서 제공되는 API를 사용함으로써 코드를 재사용하여 효율적이고 빠른 애플리케이션의 개발이 가능
- ❖ 2D 그래픽 및 3차원 그래픽을 최적화하여 표현
- ❖ 모바일용 데이터베이스인 SQLite를 제공
- ❖ 각종 오디오, 비디오 및 이미지 형식을 지원
- ❖ 모바일 기기에 내장된 각종 하드웨어를 잘 지원
- ❖ 이클립스 IDE를 통해서 강력하고 빠른 개발 환경을 제공





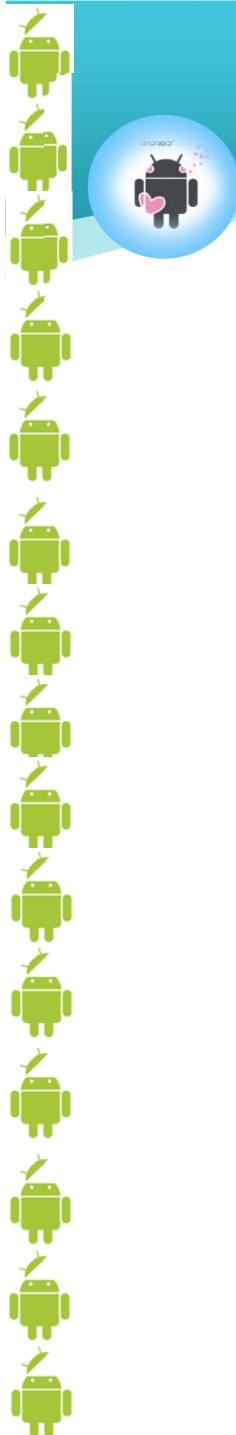
안드로이드 개요(8) - 특징



특 징

- ❖ 이 안드로이드의 **핵심 커널은 리눅스(Linux)**로 구성되어 있다.
 - ❖ 리눅스 사용법을 전혀 몰라도 안드로이드 애플리케이션을 작성에 문제가 없다.
- ❖ 안드로이드 애플리케이션 **개발 언어는 Java 언어**를 사용한다. 높은 수준의 애플리케이션을 제작하기 위한 NDK는 C, C++ 기반으로 개발한다.
- ❖ 안드로이드 SDK에서 **많은 라이브러리**를 포함하고 있어 개발을 용이하게 할 수 있다.
- ❖ 오픈 소스를 지향하기 때문에 운영체제부터 관련 문서, 개발 도구 등 거의 모든 것을 무료로 사용할 수 있다.
- ❖ 지속적인 업그레이드를 제공한다.

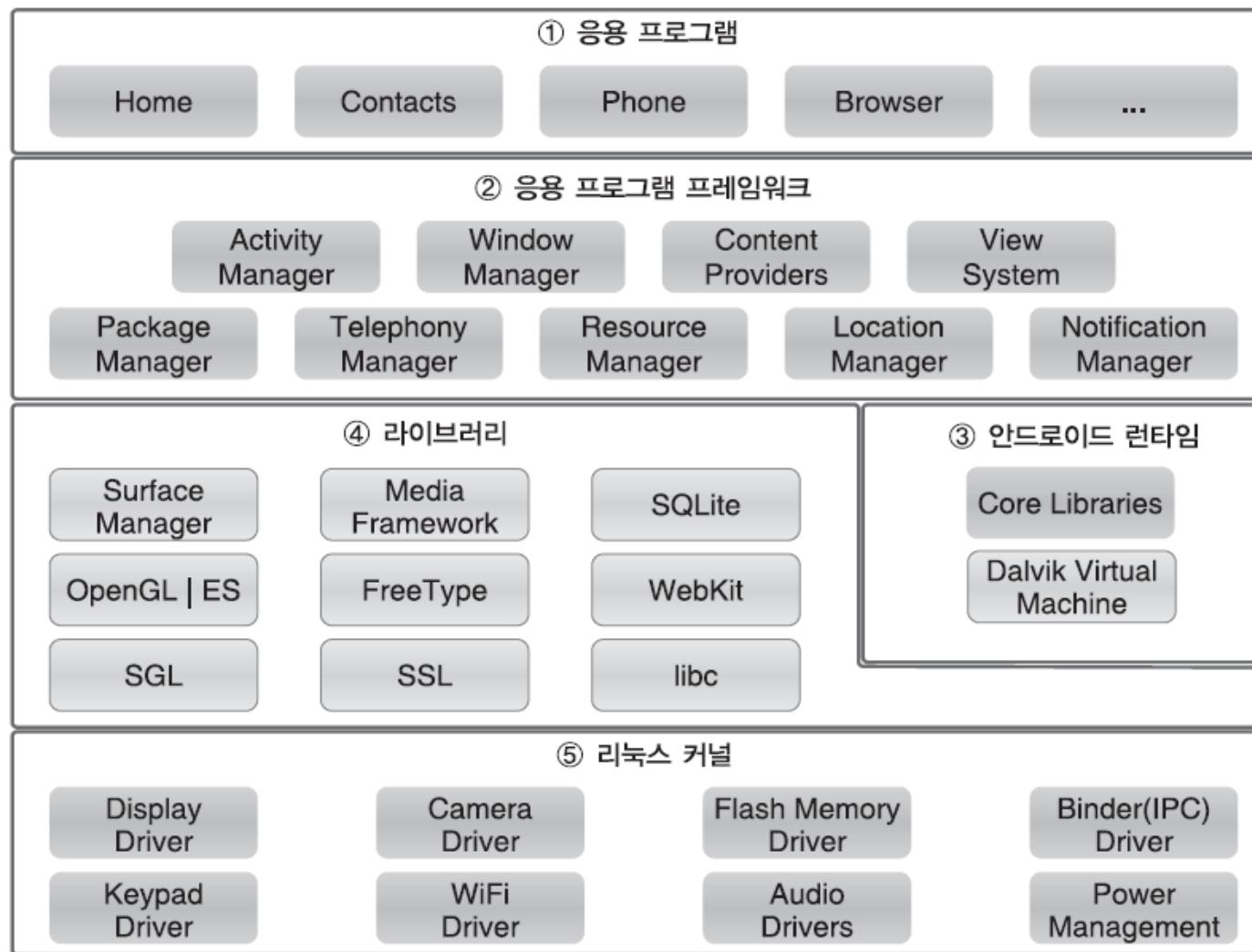




안드로이드 개요(9) - 구조



안드로이드 운영체제 구조





개발 환경 구축(1) - 개발 운영체제



개발 운영체제

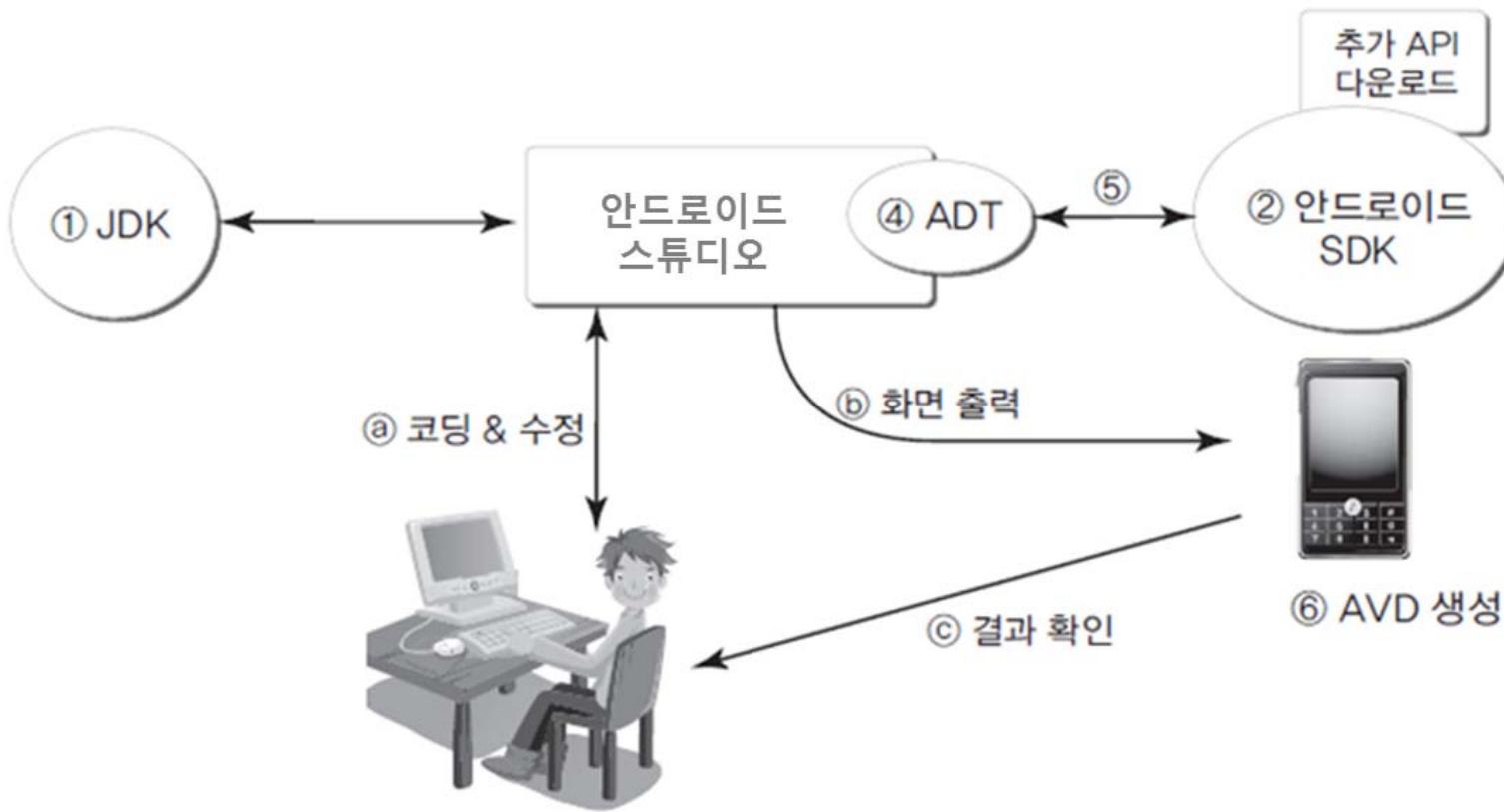
- ❖ Windows, Linux, Mac 모두를 지원함
- ❖ Windows는 32bit, 64bit 관계없이 개발할 수 있음
- ❖ 안드로이드 개발을 위한 Windows 운영체제
 - PC용
 - ✓ Windows XP, Windows Vista, Windows 7, Windows 8
 - 서버용
 - ✓ Windows Server 2003, Windows Server 2008, Windows Server 2008 R2, Windows Server 2012



개발 환경 구축(2) - 개발 환경 구성



개발 환경 구성

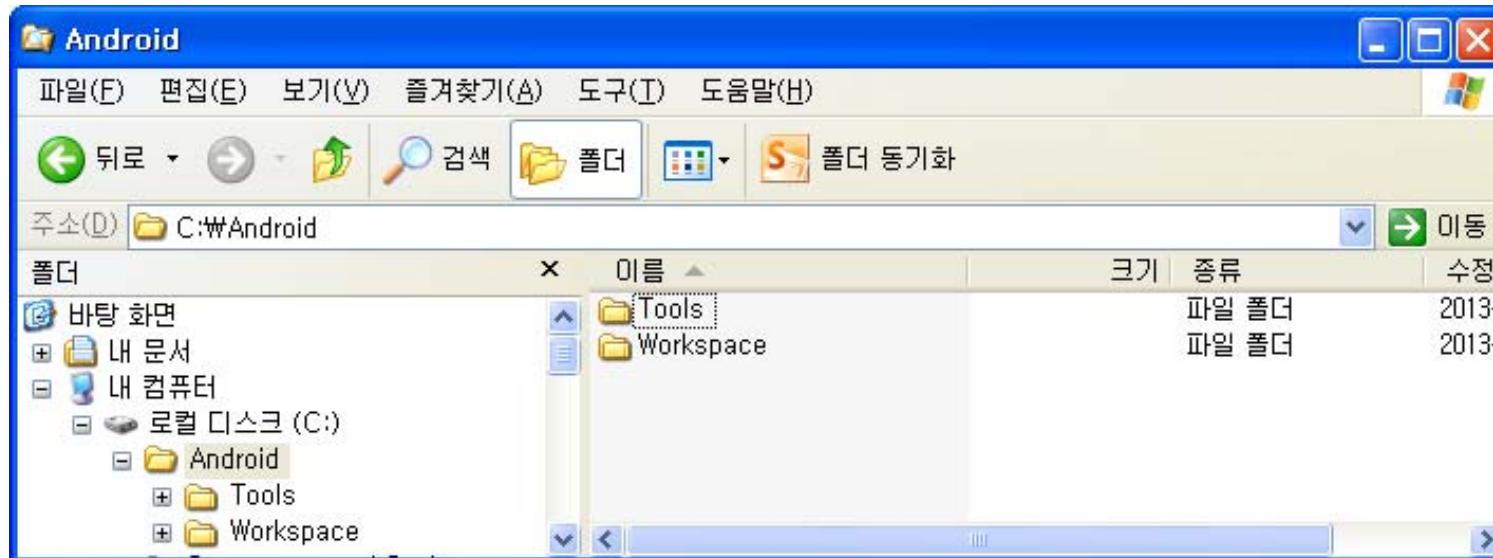




개발 환경 구축(4) – 환경 구축



○ JDK, Android Studio 설치를 위한 사전 작업



1. C:\ 하위에 Android 폴더 생성
2. 생성한 Android 폴더 하위에 Tools 폴더 생성
 - Tools – 설치 파일 저장 위치





개발 환경 구축(5) – Jdk 설치



1. JDK 설치

- ❖ JDK 다운로드(<http://java.oracle.com>) 및 설치

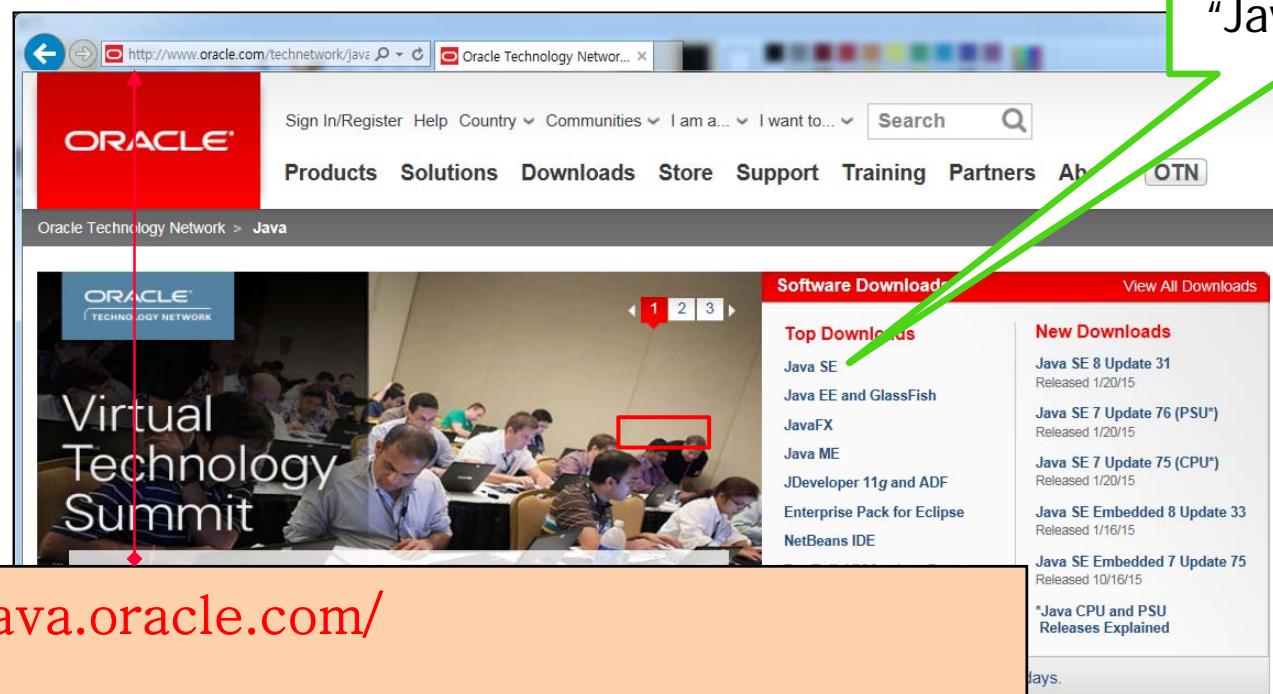
(<http://www.oracle.com/technetwork/java/index.html>)

- ❖ JRE도 설치

1. <http://java.oracle.com/>

또는

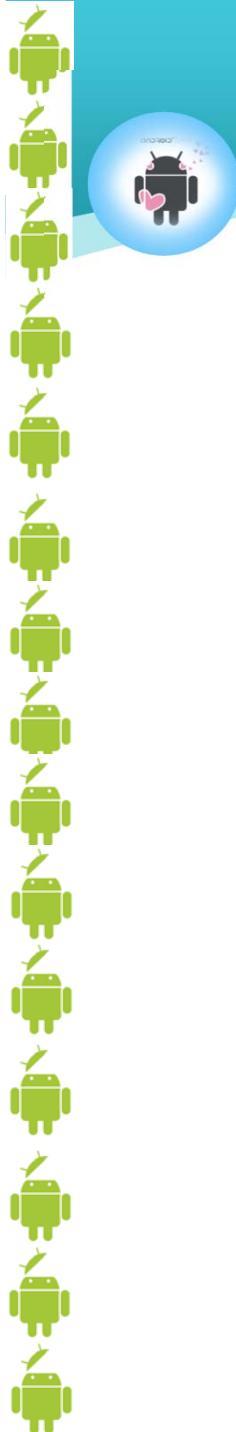
(<http://www.oracle.com/technetwork/java/index.html>)



2. 클릭

"Java SE "





개발 환경 구축(6) - JDK 설치



The screenshot shows the Oracle Java SE Downloads page. A red box highlights the 'DOWNLOAD' button for 'Java Platform (JDK) 8u31'. An orange starburst with the text '3. 클릭' (Click 3) points to this button. The page also features links for 'NetBeans with JDK 8' and download options for 'JDK', 'Server JRE', and 'JRE'.

Java SE Downloads

Java Platform (JDK) 8u31

Java Platform, Standard Edition

Java SE 8u31

This release includes important security fixes. Oracle strongly recommends users upgrade to this release.

Learn more →

- Installation Instructions
- Release Notes
- Oracle License
- Java SE Products
- Third Party Licenses
- Certified System Configurations
- Readme Files
 - JDK ReadMe
 - JRE ReadMe

Which Java package do I need?

- **Software Developers:** JDK (Java SE Development Kit). For Java Developers. Includes a complete JRE plus tools for developing, debugging, and monitoring Java applications



개발 환경 구축(7) - JDK 설치

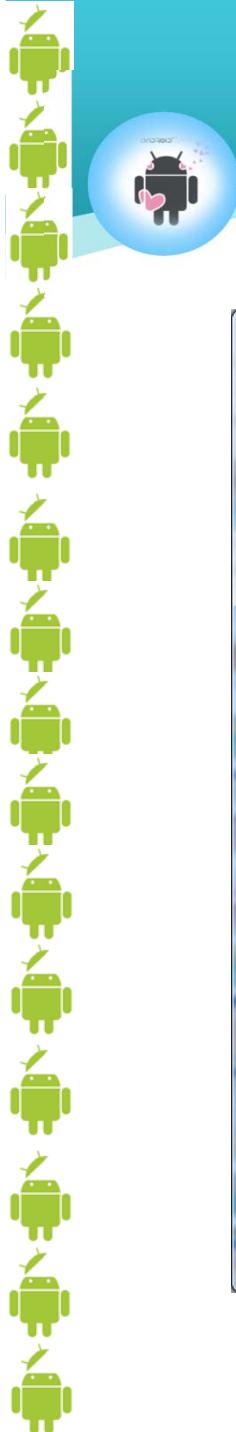


4. 클릭

The screenshot shows the Oracle Java SE Development Kit 8 Downloads page. At the top, there's a navigation bar with links like Sign In/Register, Help, Country, Communities, I am a..., I want to..., Search, Products, Solutions, Downloads, Store, Support, Training, Partners, About, and OTN. On the left, there's a sidebar with links for Java SE, Java EE, Java ME, Java SE Support, Java SE Advanced & Suite, Java Embedded, Java DB, Web Tier, Java Card, Java TV, New to Java, Community, and Java Magazine. The main content area has tabs for Overview, Downloads (which is selected), Documentation, Community, Technologies, and Training. Below the tabs, it says "Java SE Development Kit 8 Downloads". It thanks users for downloading the Java Platform, Standard Edition Development Kit (JDK). It mentions that the JDK is a development environment for building applications, applets, and components using the Java programming language. It also notes that the JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform. There's a section for "See also:" with links to Java Developer Newsletter, Java Developer Day workshops, and Java Magazine. It also mentions the JDK MD5 Checksum. A note about "Looking for JDK 8 on ARM?" directs users to the JDK 8 for ARM download page. At the bottom, there's a section for "Java SE Development Kit 8u31" with a table showing download links for Linux x86 and x64 architectures. A red starburst with the text "4. 클릭" points to the "Accept License Agreement" checkbox in the "You must accept the Oracle Binary Code License Agreement for Java SE to download this software." dialog.

Product / File Description	File Size	Download
Linux x86	135.24 MB	jdk-8u31-linux-i586.rpm
Linux x86	154.91 MB	jdk-8u31-linux-i586.tar.gz
Linux x64	135.62 MB	jdk-8u31-linux-x64.rpm





개발 환경 구축(8) – JDK 설치



Screenshot of the Oracle Java SE Development Kit 8u31 download page:

See also:

- Java Developer Newsletter (tick the checkbox under Subscription Center > Oracle Technology News)
- Java Developer Day hands-on workshops (free) and other events
- Java Magazine

JDK MD5 Checksum

Looking for JDK 8 on ARM?
JDK 8 for ARM downloads have moved to the JDK 8 for ARM download page.

Java SE Development Kit 8u31

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

Thank you for accepting the Oracle Binary Code License Agreement for Java SE. You can now download this software.

Product / File Description	File Size	Download
Linux x86	135.24 MB	jdk-8u31-linux-i586.tar.gz
Linux x86	154.91 MB	jdk-8u31-linux-i586.rpm
Linux x64	135.62 MB	jdk-8u31-linux-x64.tar.gz
Linux x64	153.45 MB	jdk-8u31-linux-x64.rpm
Mac OS X x64	209.17 MB	jdk-8u31-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	136.91 MB	jdk-8u31-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	97.11 MB	jdk-8u31-solaris-sparcv9.tar.Z
Solaris x64 (SVR4 package)	137.51 MB	jdk-8u31-solaris-x64.tar.Z
Solaris x64	94.62 MB	jdk-8u31-solaris-x64.tar.gz
Windows x86	157.96 MB	jdk-8u31-windows-i586.exe
Windows x64	170.36 MB	jdk-8u31-windows-x64.exe

Java SE Development Kit 8u31 Demos and Samples Downloads

5. 운영체제 선택
(32bit → windows x86)
(64bit → windows x64)

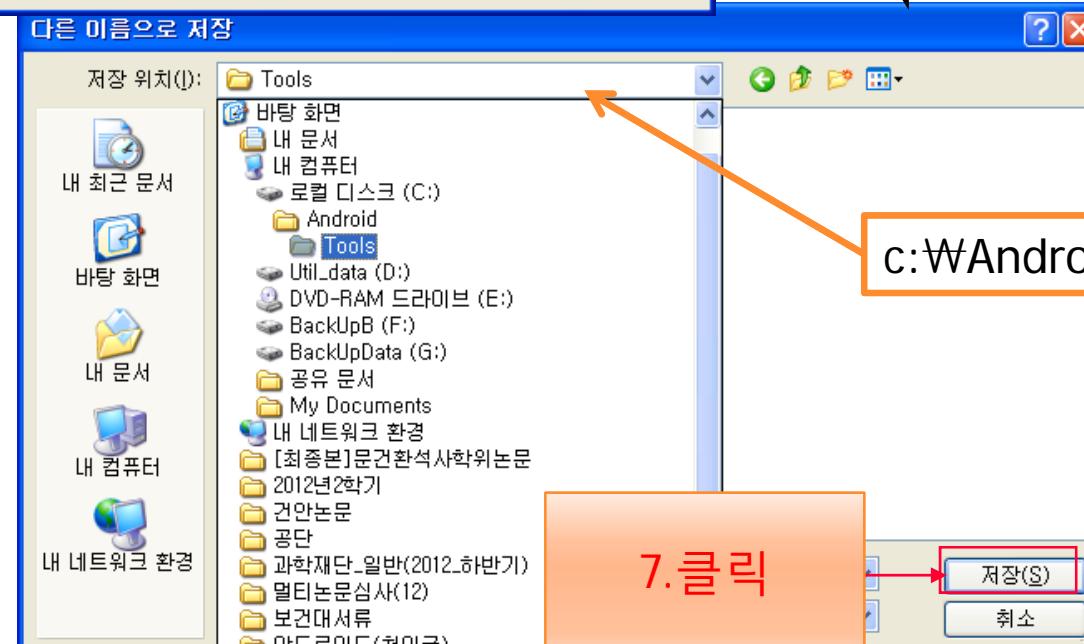
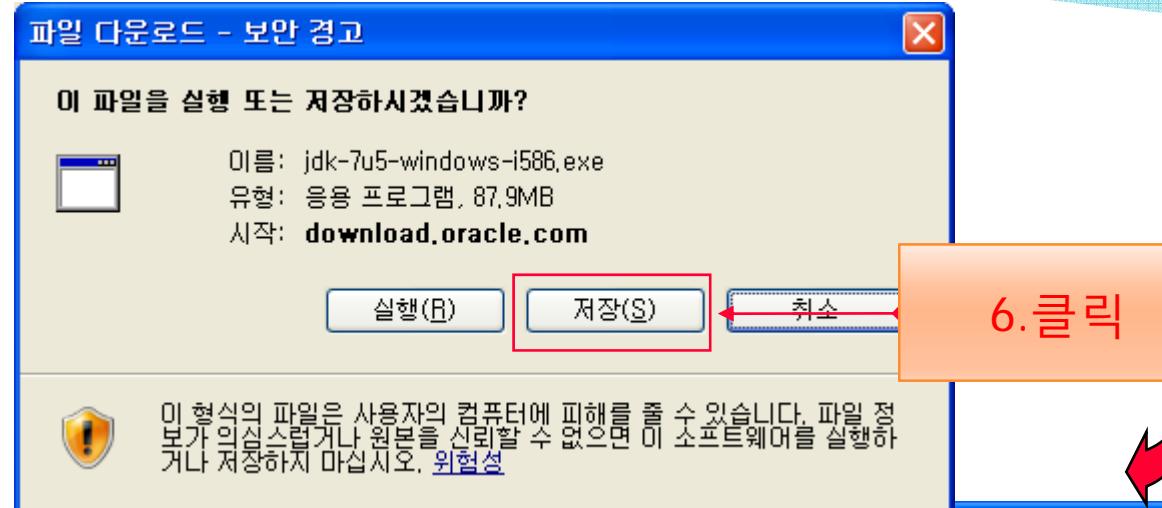
REGISTER! >

Webcast Virtual Technology Summit Content Now OnDemand >





개발 환경 구축(9) - JDK 설치





Tip(PC 종류 알아내기) 1



◎ 자신의 운영체제 비트처리 확인

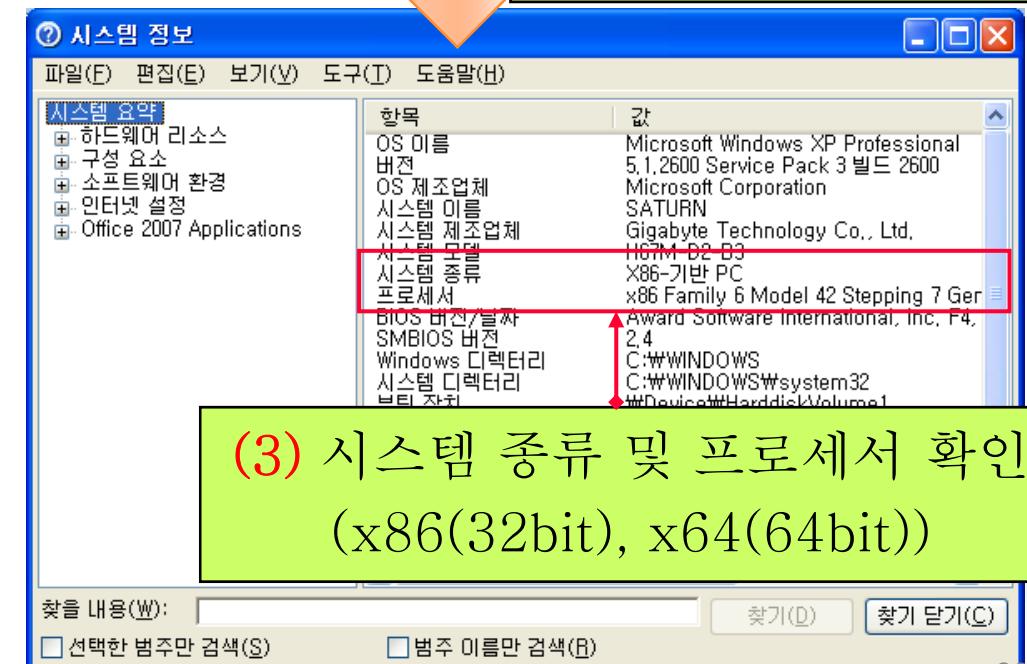
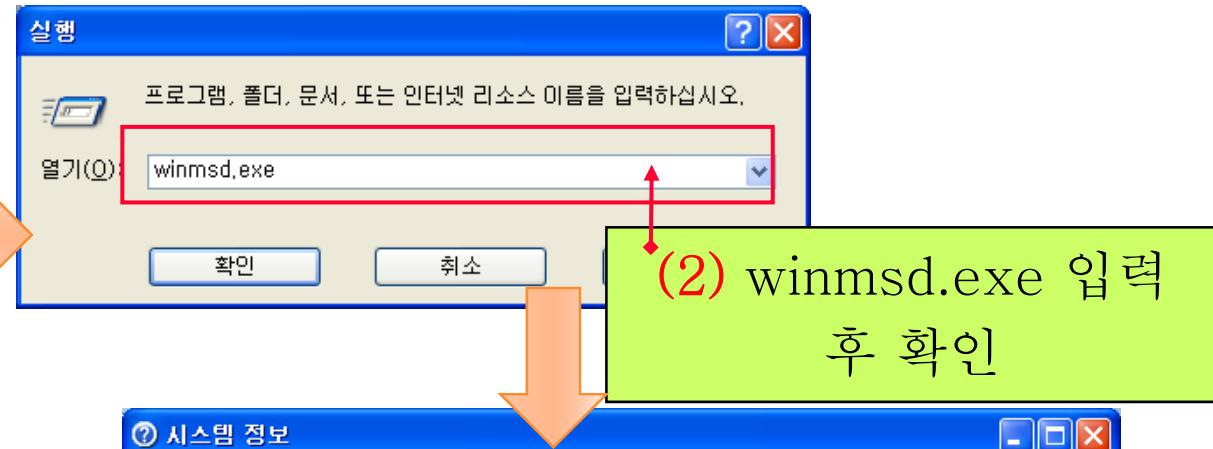
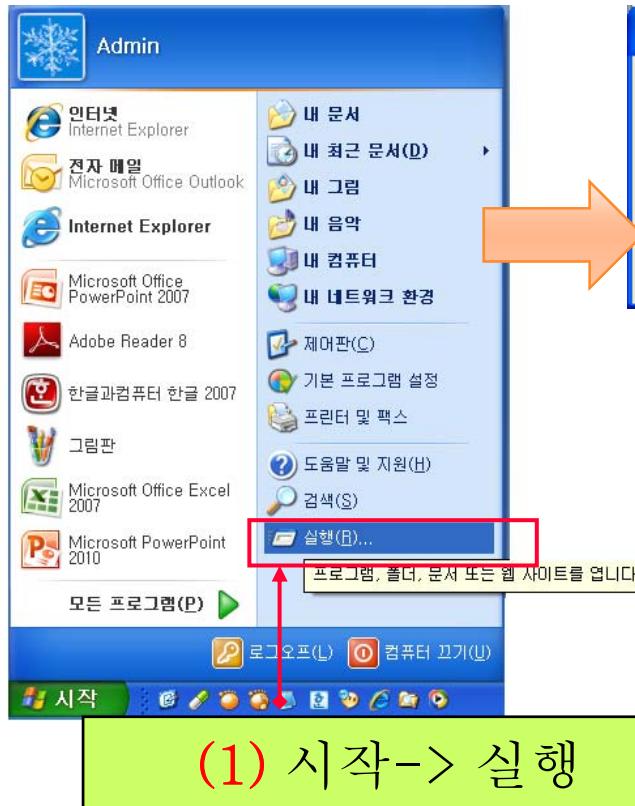




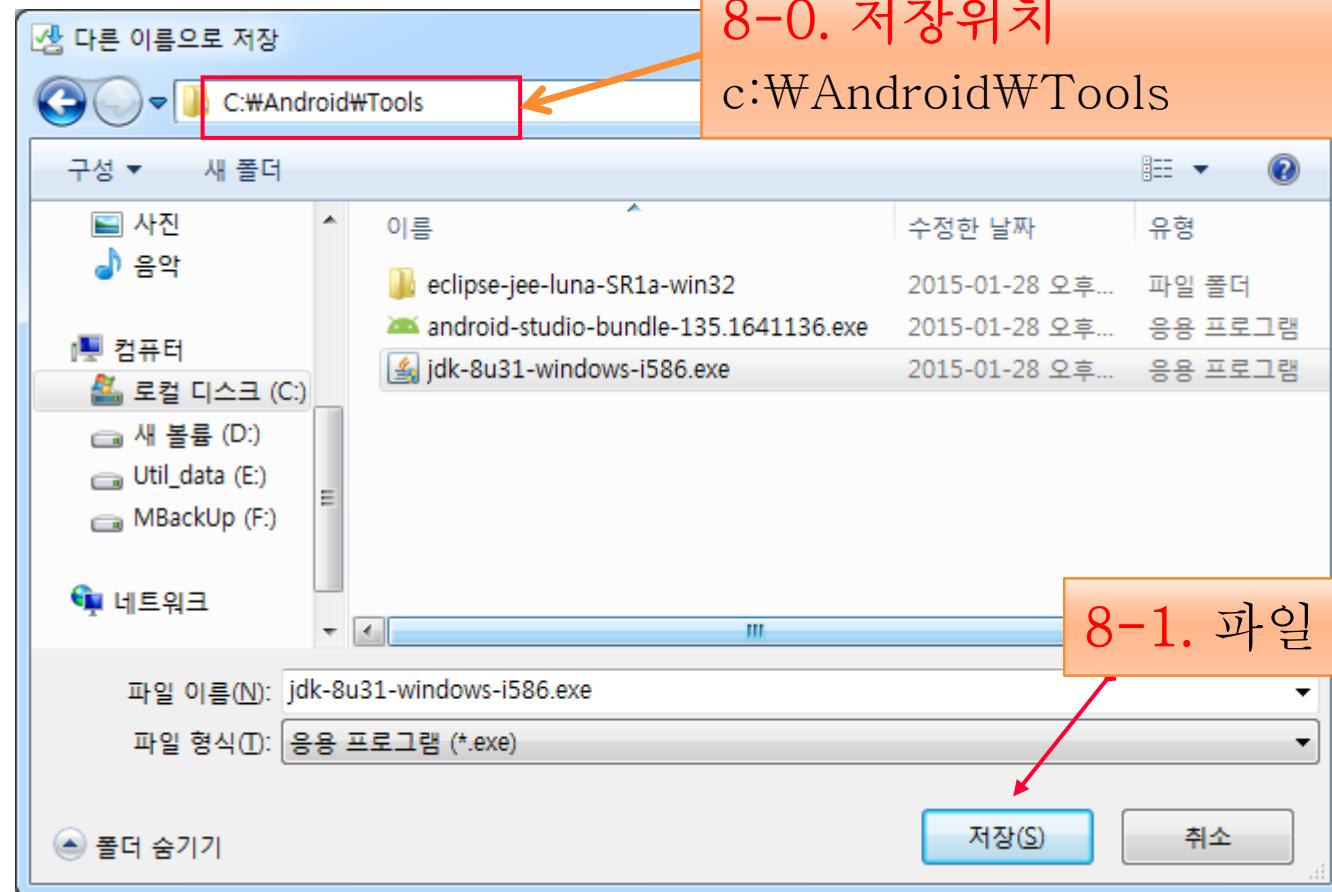
Tip(PC 종류 알아내기) 2



Windows에서 64bit와 32bit 구분

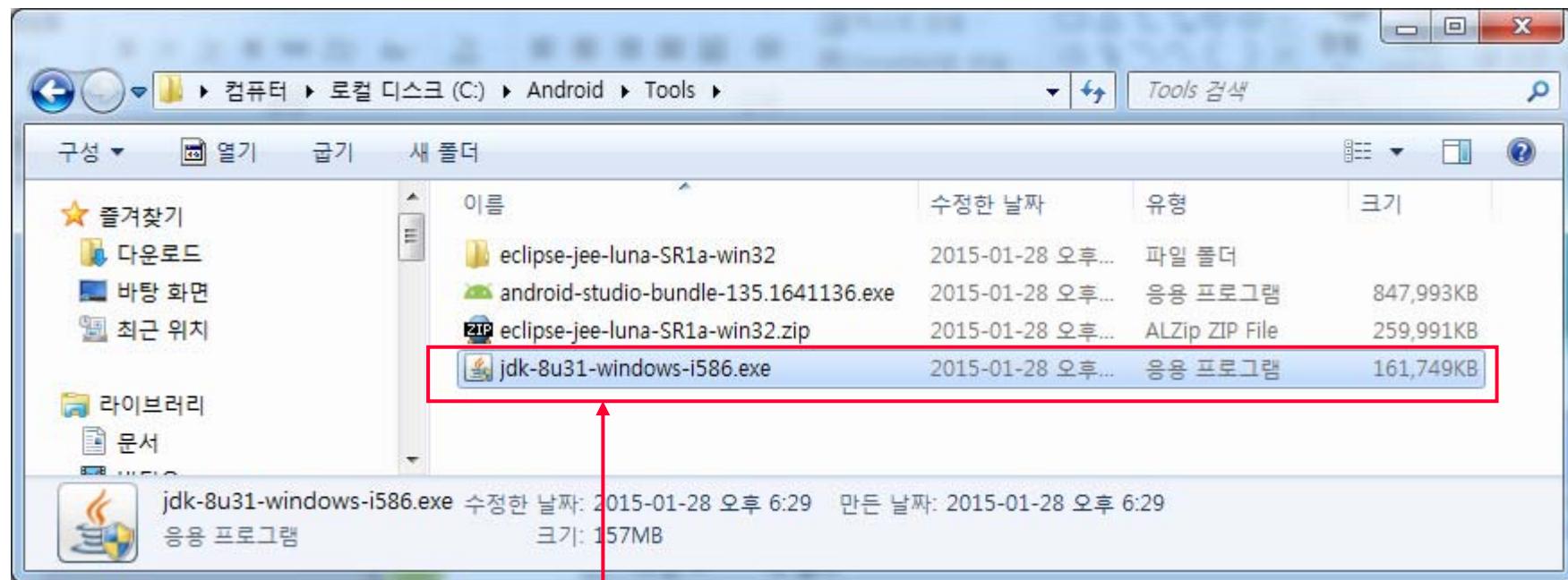


개발 환경 구축(10) - JDK 설치





개발 환경 구축(10) - JDK 설치



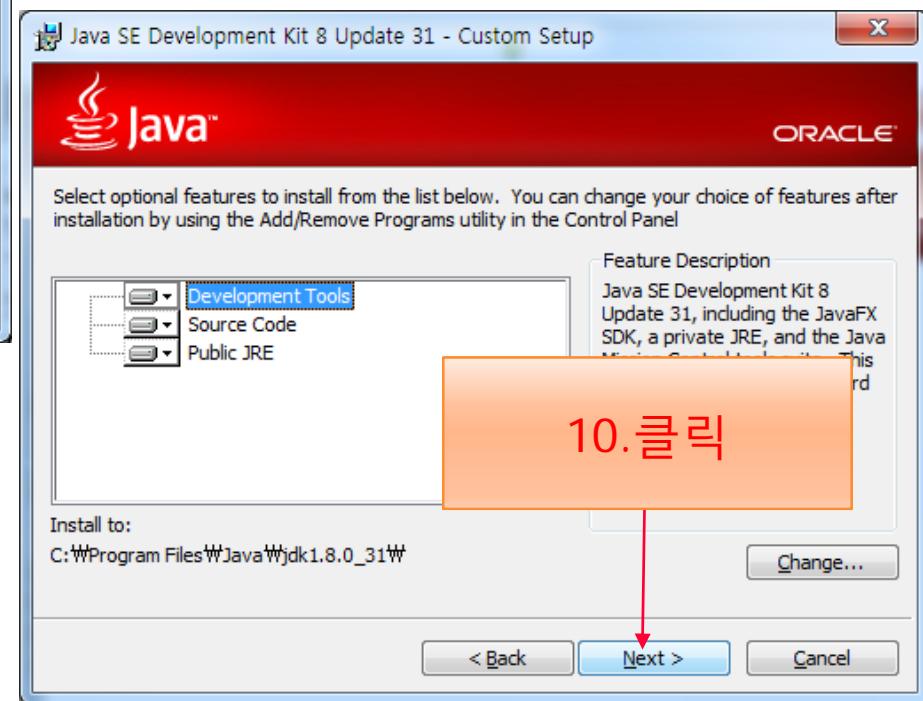
8-2. 파일 실행(더블클릭)



개발 환경 구축(11) – JDK 설치



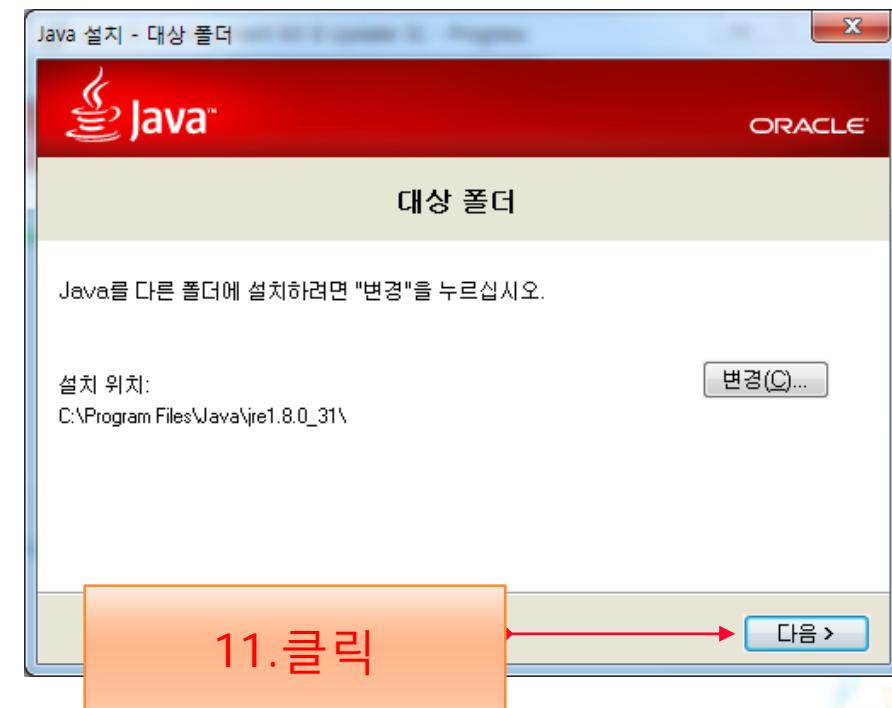
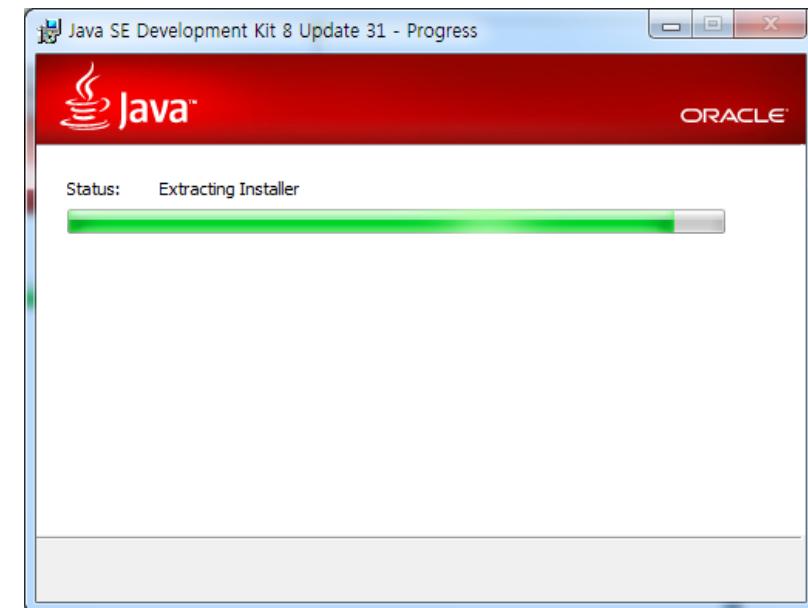
9. 클릭



10. 클릭



개발 환경 구축(12) - JDK 설치



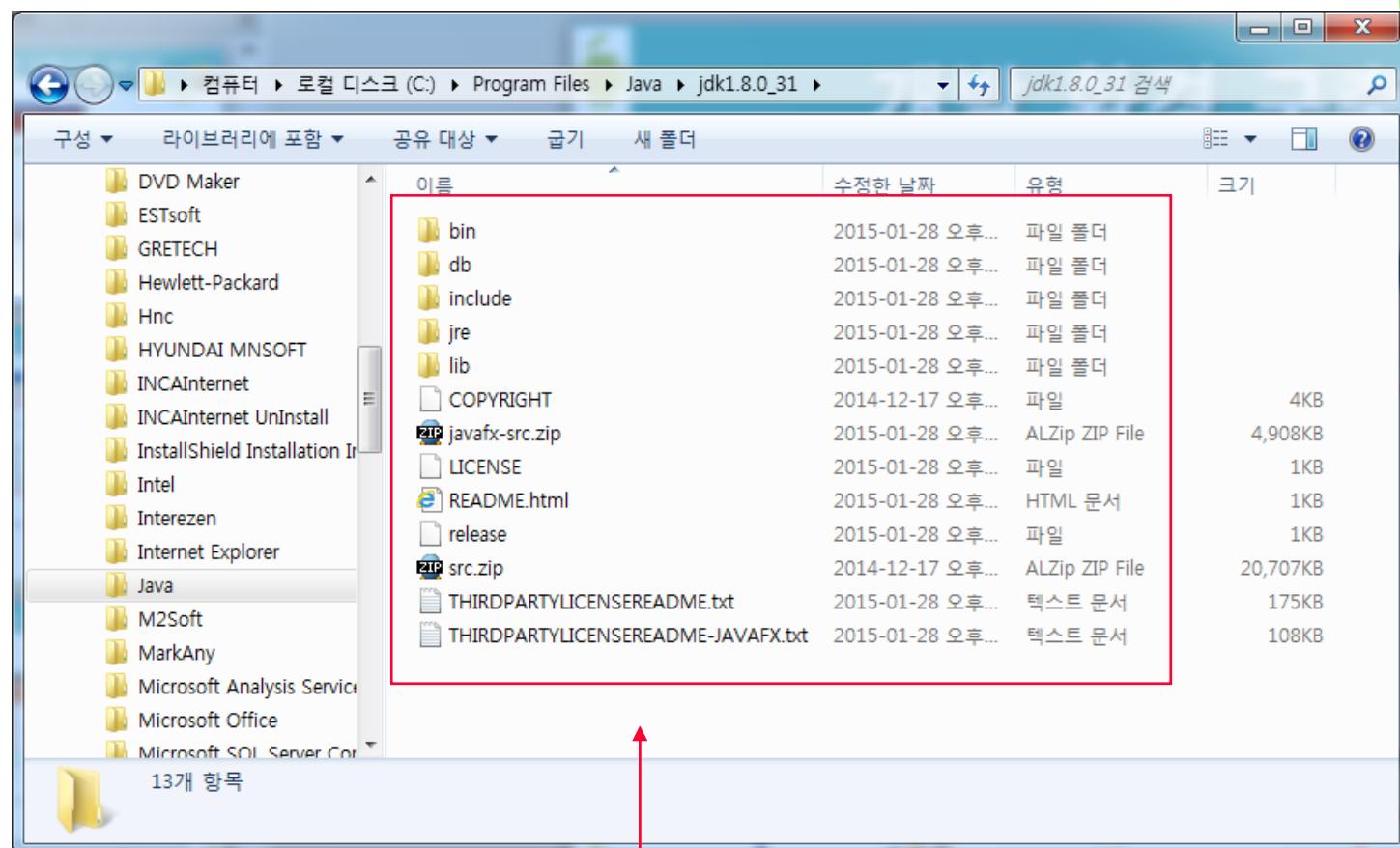


개발 환경 구축(13) - JDK 설치





개발 환경 구축(14) - JDK 설치



12. JDK 구조 확인

C:\Program Files\Java\jdk1.8.0_31





개발 환경 구축(15) - JDK 설치

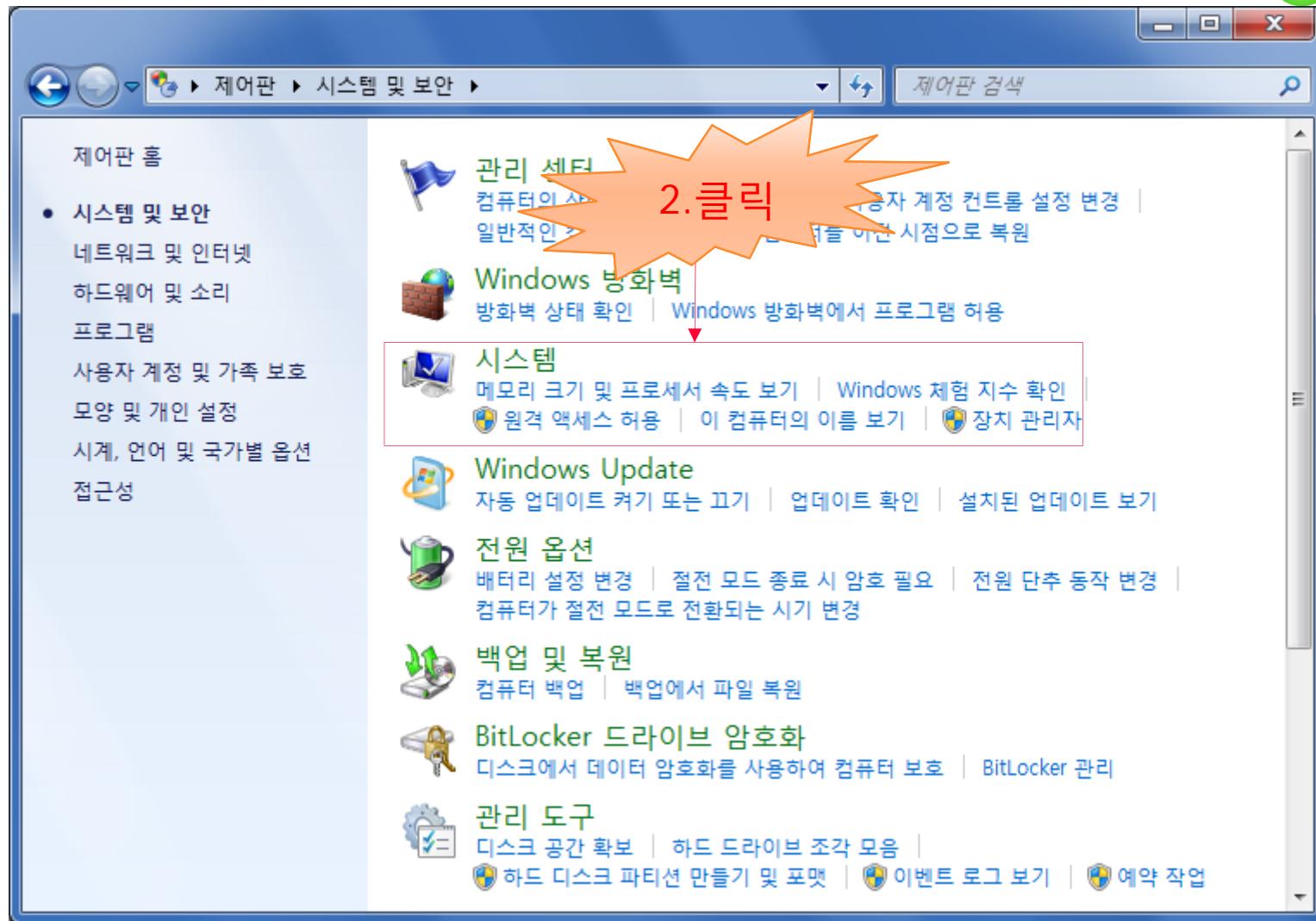


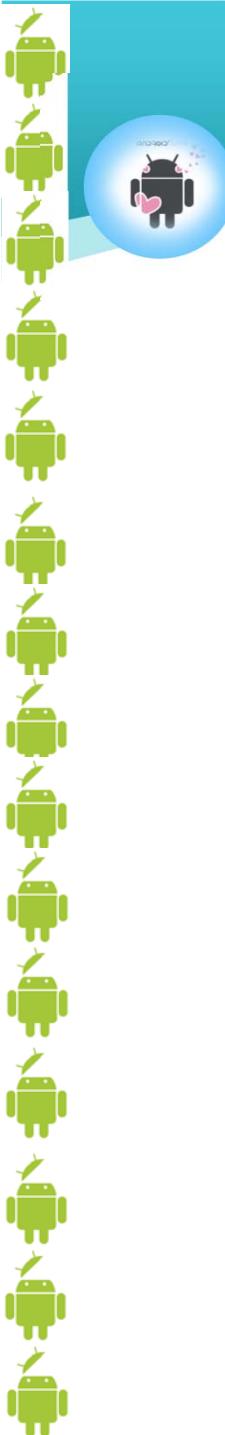
1-1. JDK 환경 설정





개발 환경 구축(16) - JDK 설치



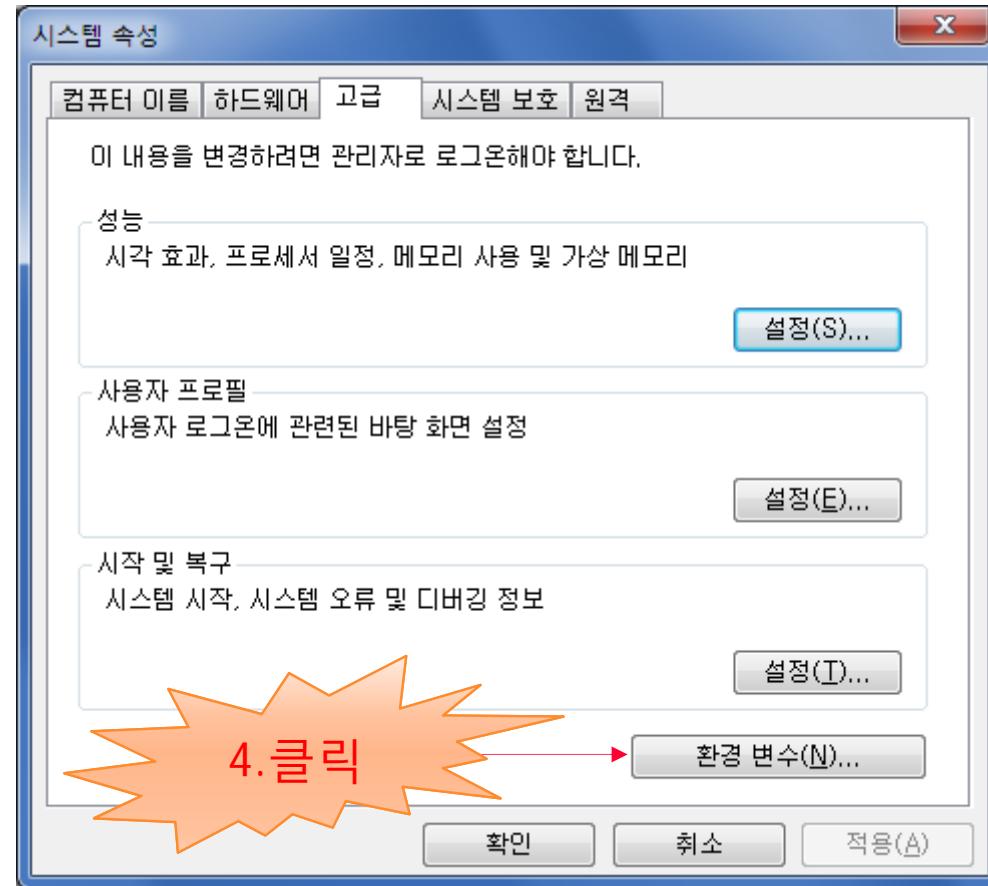


개발 환경 구축(17) - JDK 설치





개발 환경 구축(18) - JDK 설치

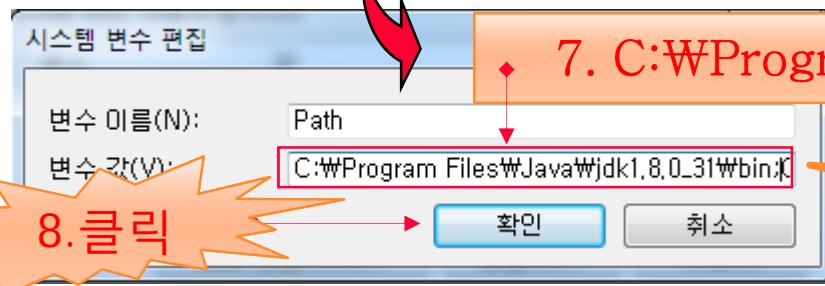
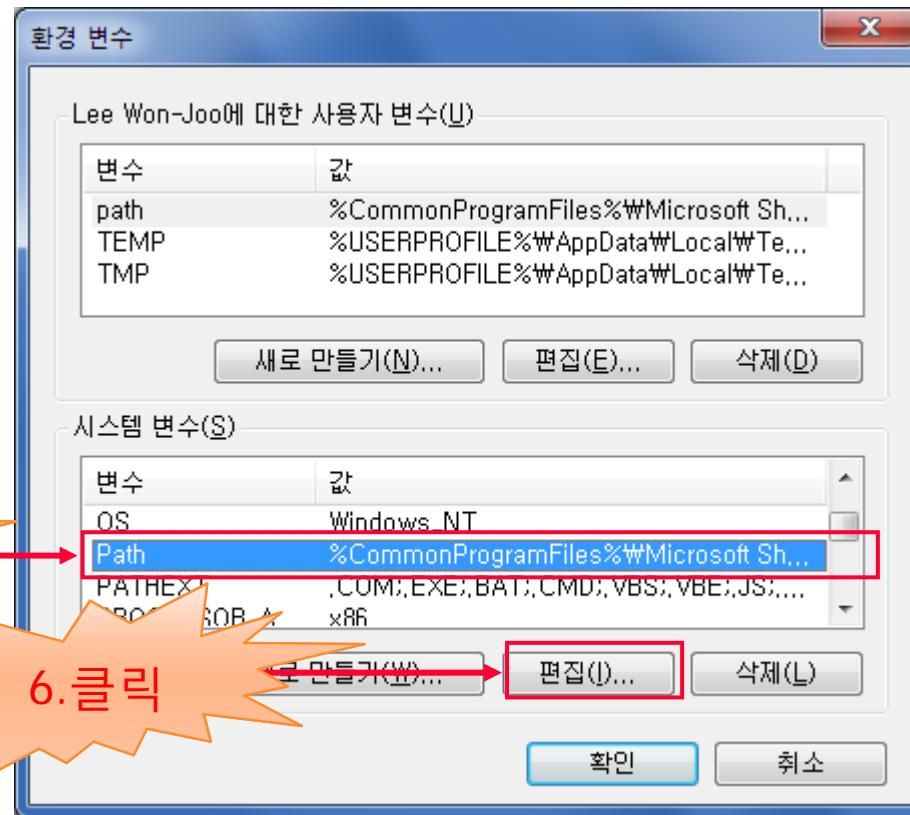




개발 환경 구축(19) - JDK 설치



Path 지정



7. C:\Program Files\Java\jdk1.8.0_31\bin;

주의: java path 입력시
맨 앞에 추가





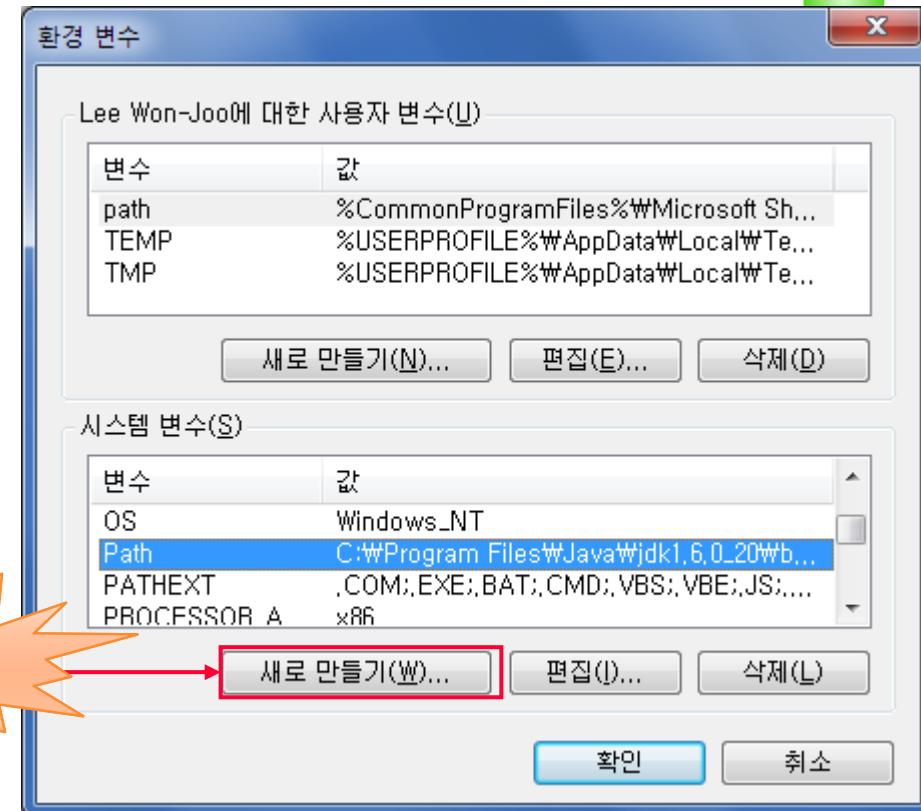
개발 환경 구축(20) - JDK 설치



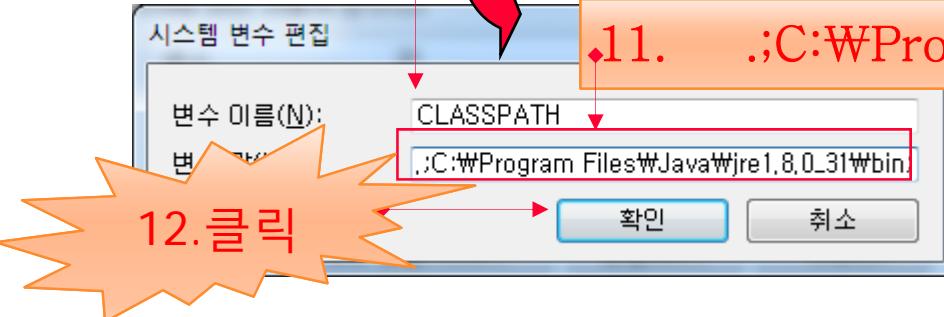
CLASSPATH 지정

10. CLASSPATH 입력

9. 클릭



11. .;C:\Program Files\Java\jre1.8.0_31\bin;



12. 클릭





개발 환경 구축(21) – Android Studio 설치



- <http://developer.android.com/index.html>

The screenshot shows the main page of the Android Developers website. At the top, there's a navigation bar with links for 'Developers' (with a dropdown arrow), 'Design', 'Develop', and 'Distribute'. Below the navigation is a large image of three devices: a smartphone, a smartwatch, and a tablet, all displaying the Android 5.0 Lollipop interface. To the right of the devices, there's a section titled 'Android 5.0 Lollipop' with a brief description of its new features and a 'Learn More' button. At the bottom of the page, there are three cards: 'Building Apps for Wearables' (with a photo of a person and text about notifications and sync), 'Creating Apps with Material Design' (with a graphic of colored squares), and 'Download Android Studio and SDK Tools' (with a photo of a laptop showing code). A green Android robot icon is visible in the bottom right corner of the slide.

1. 다운로드 사이트 접속
(<http://developer.android.com/index.html>)

Android Studio 설치



The screenshot shows the official Android developer website at <http://developer.android.com/develop/index.html>. The 'Tools' tab is highlighted with a red box and a callout. A large orange callout box contains the text '2. [Develop] 클릭' and '3. [Tool] 클릭'. A circular arrow points from the 'Tools' tab back to the 'Tools' section in the main content area.

2. [Develop] 클릭
3. [Tool] 클릭

Developer NEWS FEATURED DOCS

Making Beautiful Android App!

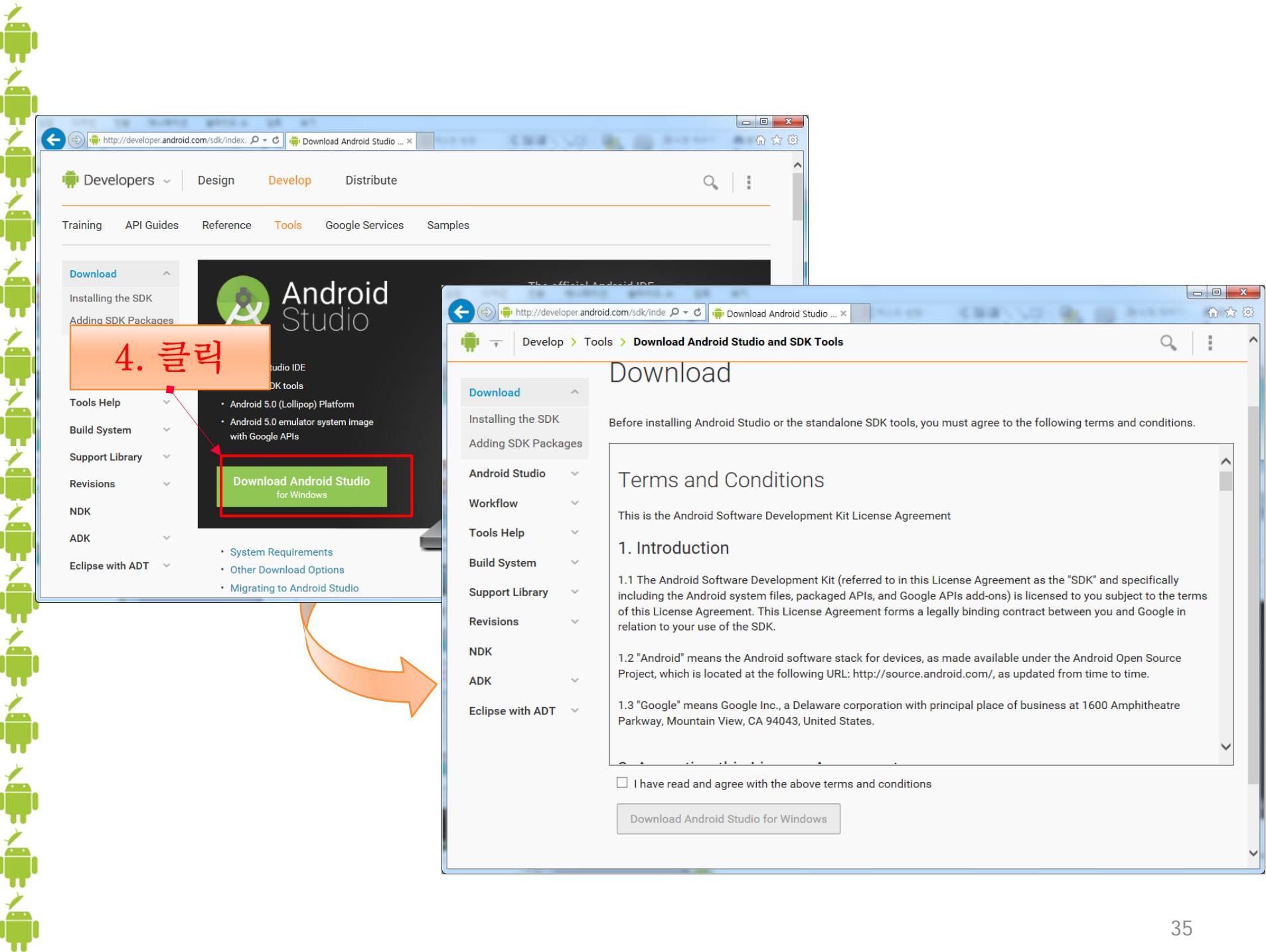
<http://developer.android.com/sdk/index.html>

As thinner density screens gain popularity

Download Android Studio for Windows

System Requirements
Other Download Options
Migrating to Android Studio







The screenshot shows a web browser displaying the 'Download' page for Android Studio and SDK Tools from developer.android.com. The URL in the address bar is <http://developer.android.com/sdk/index.html>. The page title is 'Download Android Studio and SDK Tools'. On the left, there's a sidebar with a tree view under the 'Download' section, including 'Installing the SDK', 'Adding SDK Packages', 'Android Studio', 'Workflow', 'Tools Help', 'Build System', 'Support Library', and 'Revisions'. The main content area is titled 'Download' and contains a 'Terms and Conditions' section. The text in this section is the Android Software Development Kit License Agreement. It includes sections like '1. Introduction' and '5. ADK' which defines the Android software stack for devices. At the bottom, there's a checkbox labeled 'I have read and agree with the above terms and conditions' and a large blue button labeled 'Android Studio for Windows'.

Before installing Android Studio or the standalone SDK tools, you must agree to the following terms and conditions.

Terms and Conditions

This is the Android Software Development Kit License Agreement

1. Introduction

1.1 The Android Software Development Kit (referred to in this License Agreement as the "SDK" and specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of this License Agreement. This License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.

NDK means the Android software stack for devices, as made available under the Android Open Source Project. It is located at the following URL: <http://source.android.com/>, as updated from time to time.

ADK means Google Inc., a Delaware corporation with principal place of business at 1600 Amphitheatre Parkway, Mountain View, CA 94043, United States.

Eclipse means the Eclipse platform, as made available under the Eclipse Public License, Version 1.0, which is located at the following URL: <http://www.eclipse.org/legal/epl-v10.html>.

I have read and agree with the above terms and conditions

Android Studio for Windows

6. 클릭



http://developer.android.com/sdk/installing/studio

Installing the Android SDK...

Developers Design Develop Distribute

Training API Guides Reference Tools Google Services Samples

Download

Installing the SDK

Adding SDK Packages

Android Studio

Workflow

Tools Help

Build System

Support Library

Revisions

NDK

ADK

Eclipse with

Installing Android Studio

Android Studio provides everything you need to start developing apps for Android, including the Android Studio IDE and the Android SDK tools.

If you didn't download Android Studio, go [download Android Studio now](#), or switch to the [stand-alone SDK Tools install](#) instructions.

Before you set up Android Studio, be sure you have installed JDK 6 or higher (the JRE alone is not sufficient)—JDK 7 is required when developing for Android 5.0 and higher. To check if you have JDK in your terminal and type `javac -version`. If the JDK is not available or the version is

To set up Android Studio on Windows:

1. Launch the .exe file you just downloaded.
2. Follow the setup wizard to install Android Studio and any necessary SDK tools.

7. [다른 이름으로 저장(A)]
클릭

dl.google.com의 android-studio-bundle-135.1740770-windows.exe(816MB)을(를) 실행하거나 저장하시겠습니까?

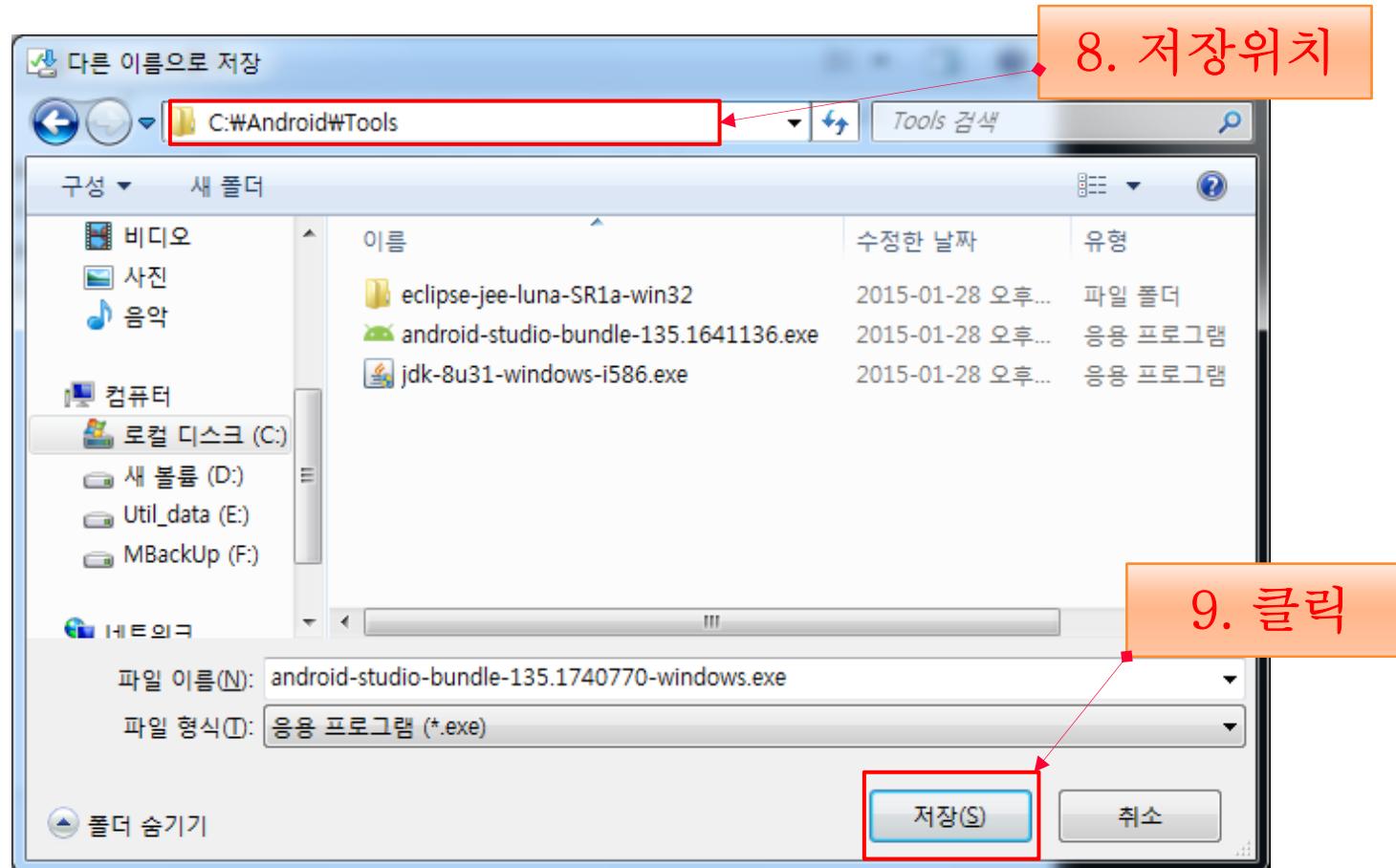
설명: 이 형식의 파일은 사용자의 컴퓨터에 피해를 줄 수 있습니다.

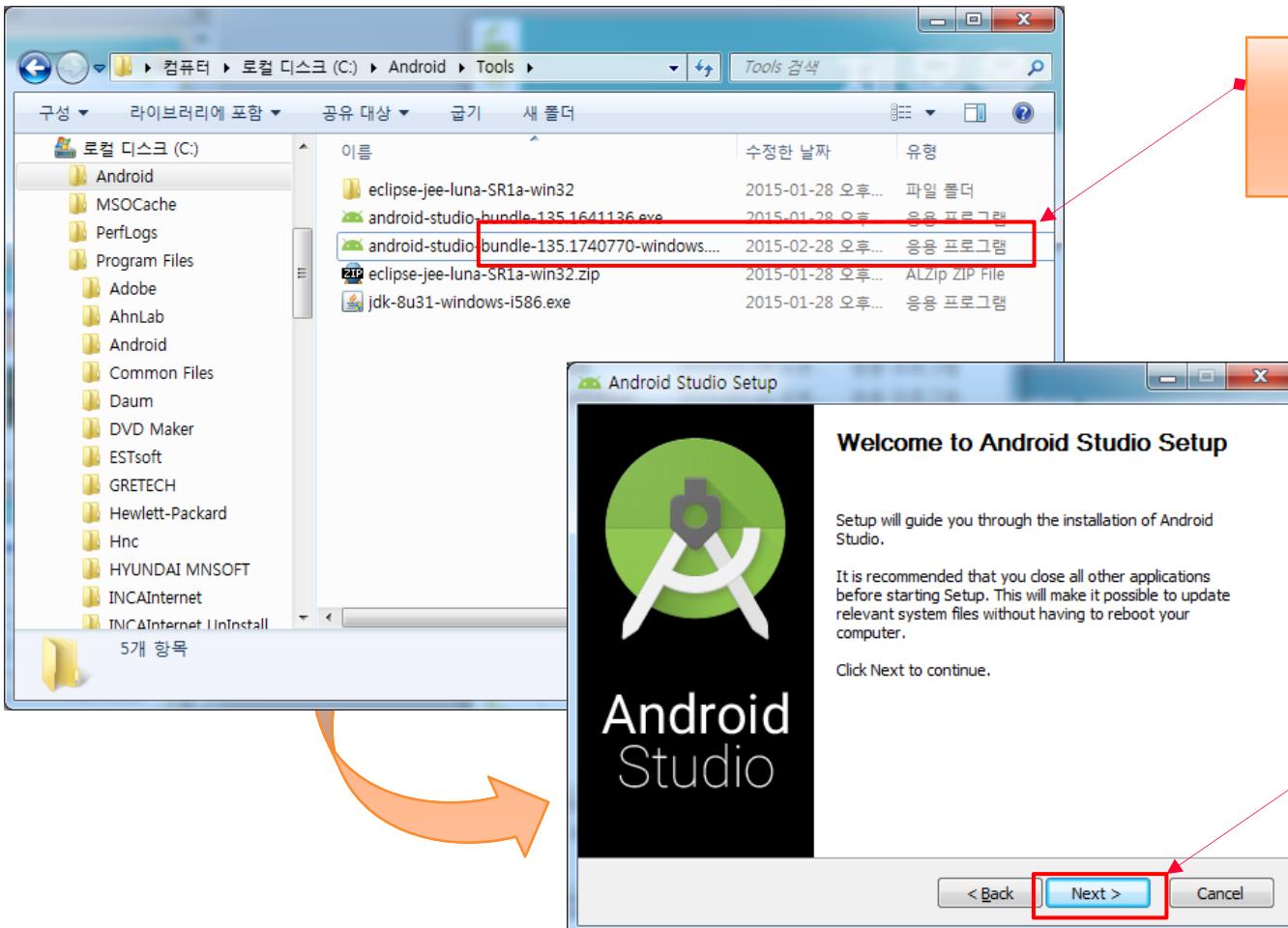
실행(R) 저장(S) 취소(C)

저장(S)
다른 이름으로 저장(A)
저장 후 실행(P)



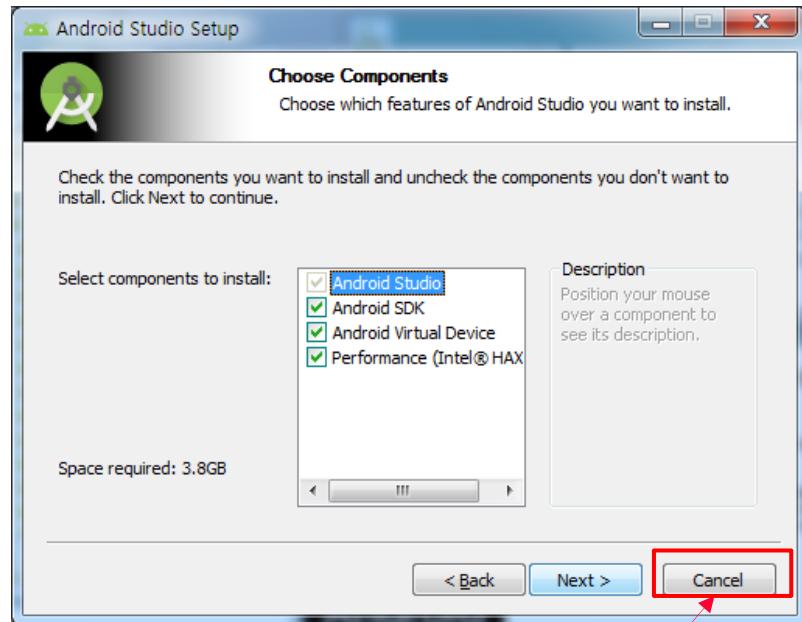
○ [C:\Android\Tools]에 저장



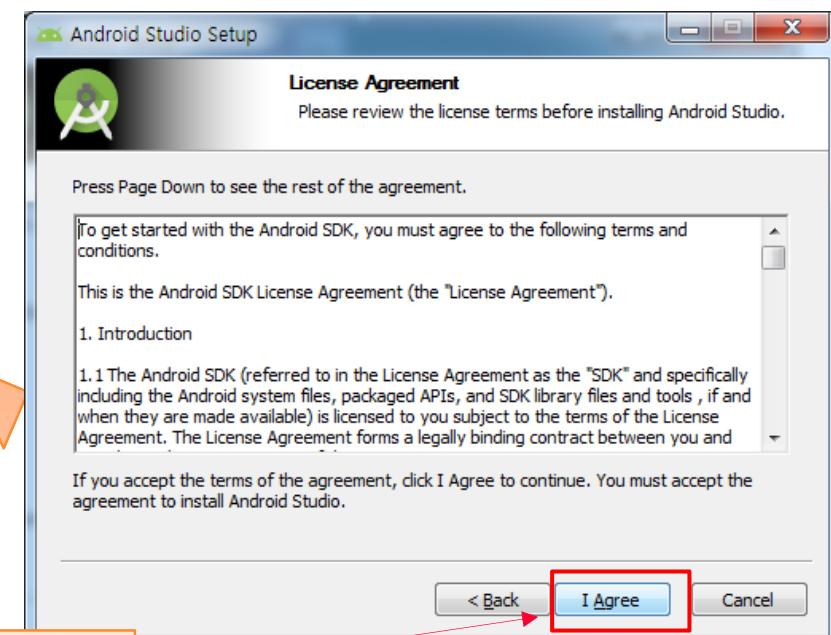


10. 설치
(더블클릭)

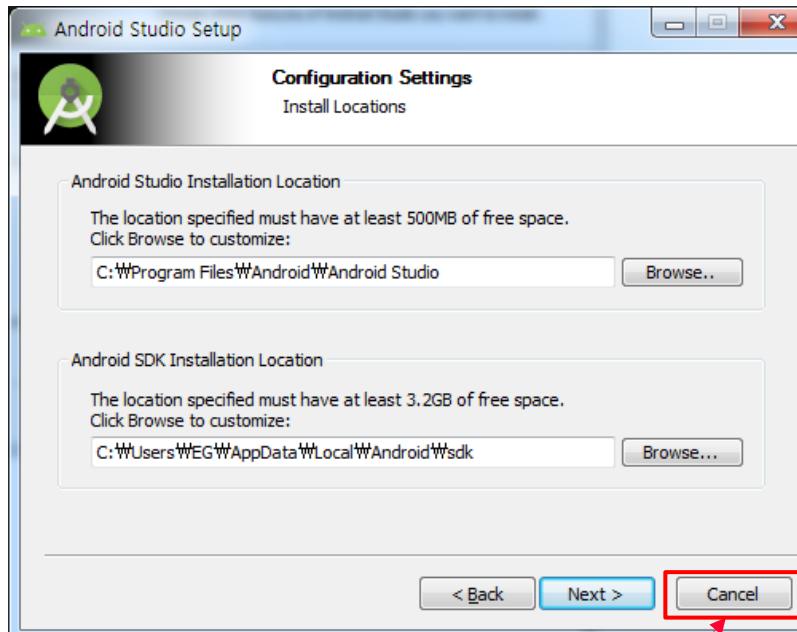
11. 클릭



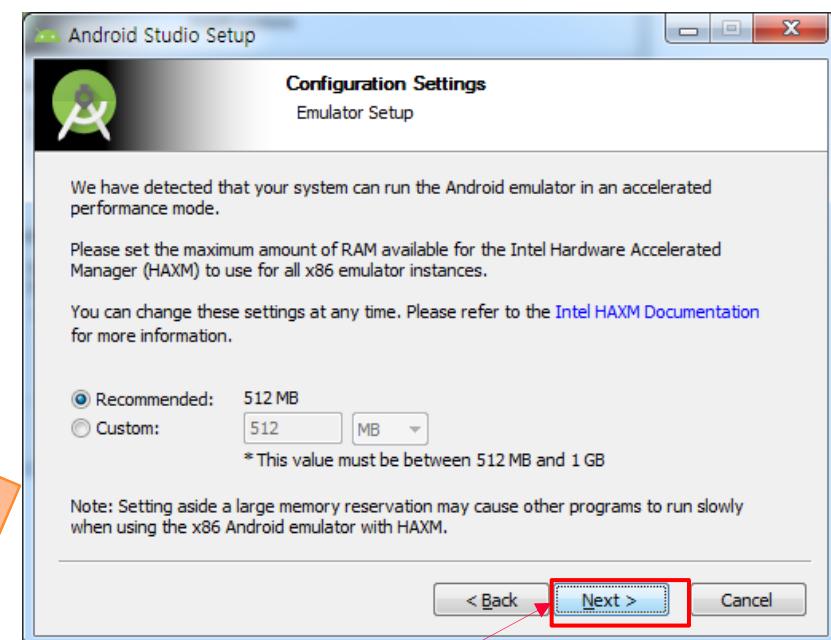
12. 클릭



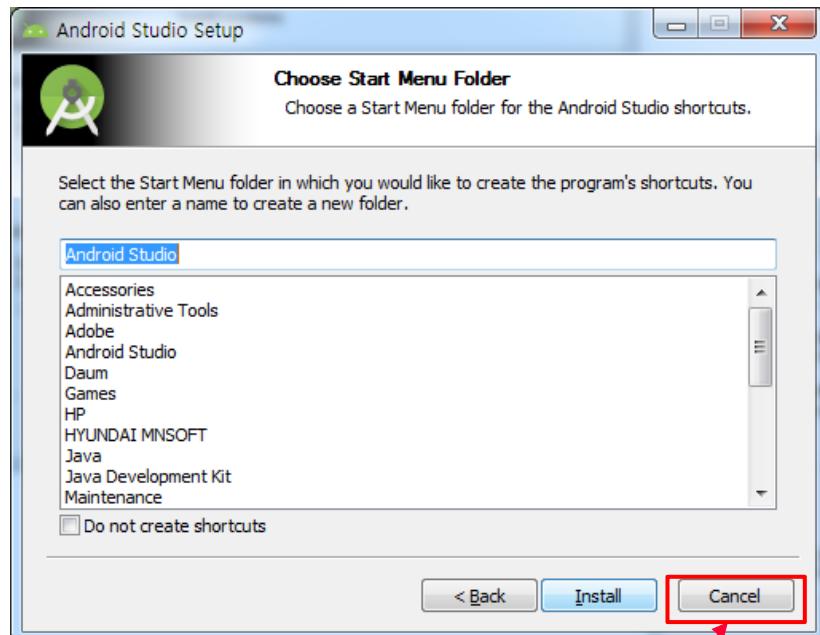
13. 클릭



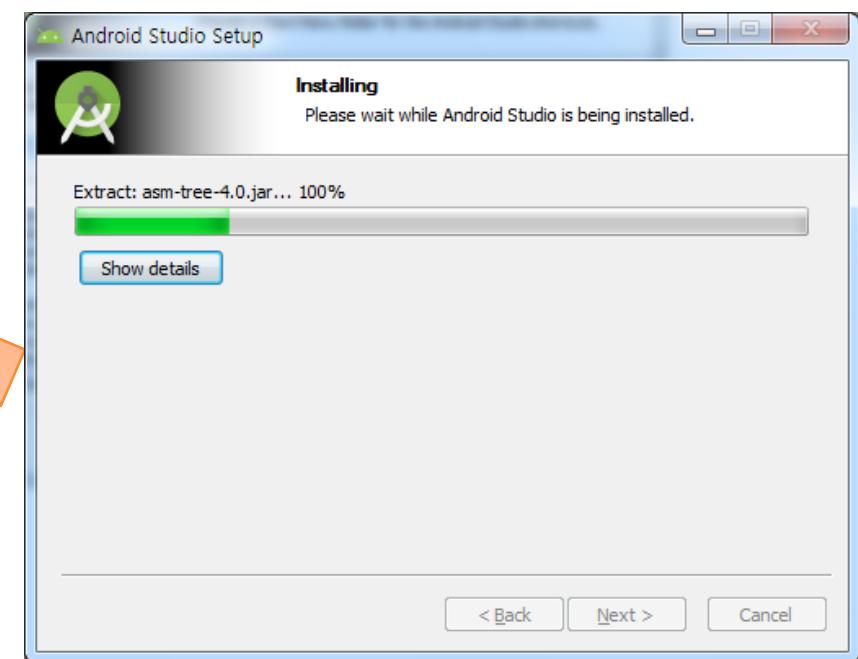
14. 클릭

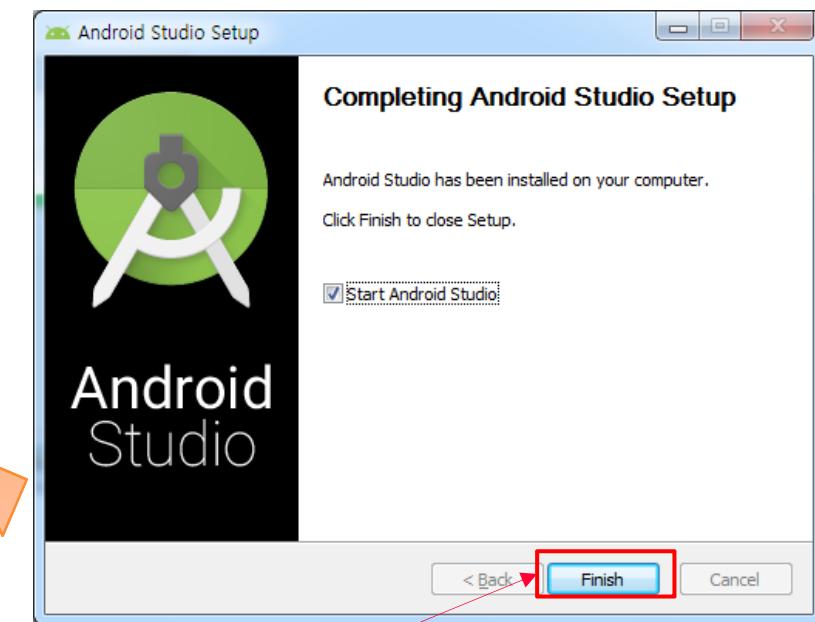
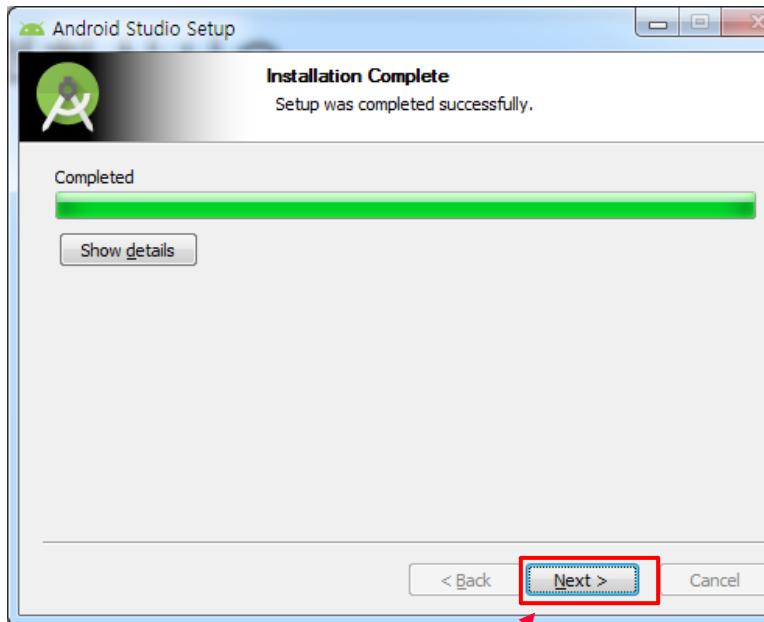


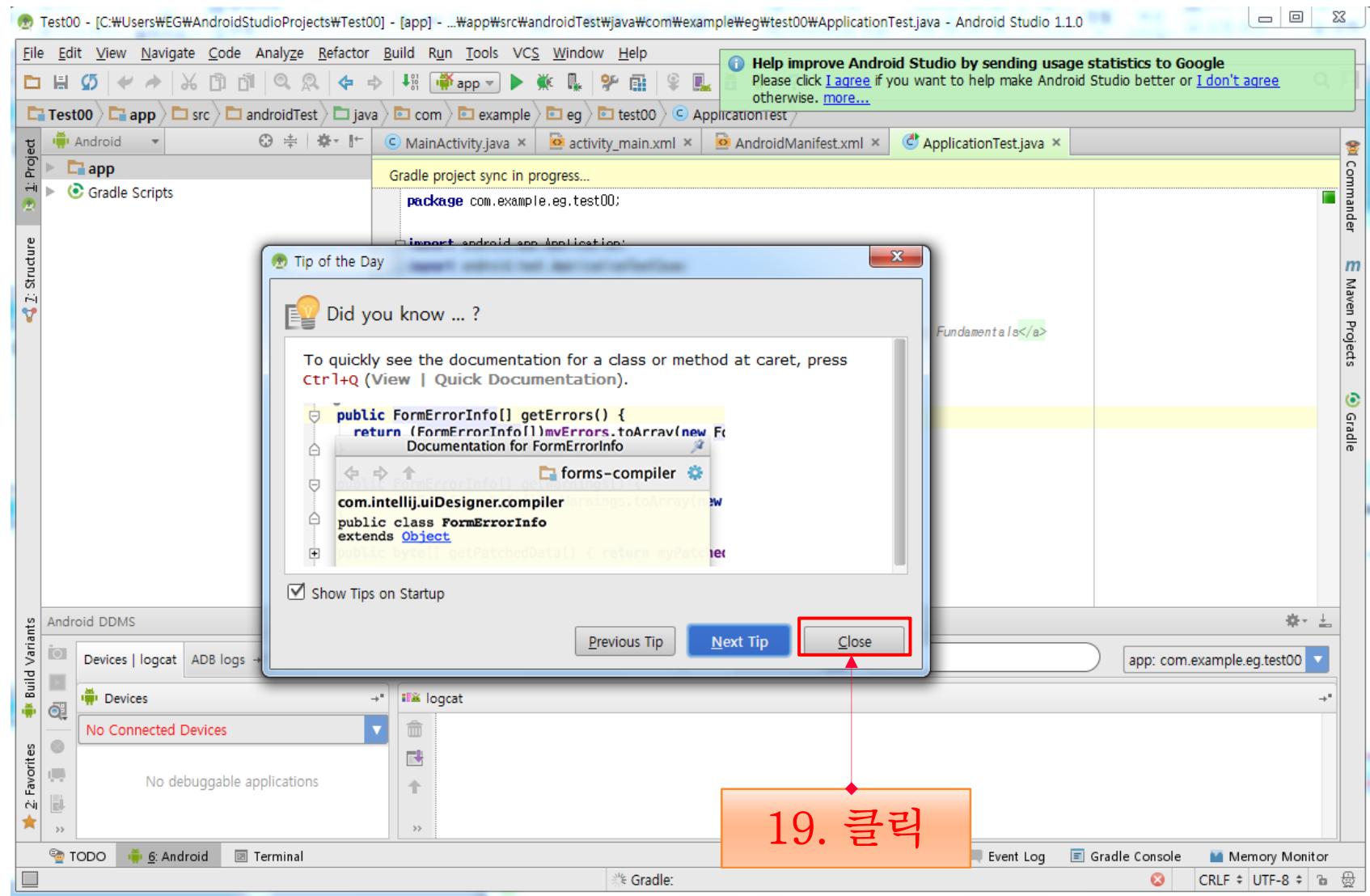
15. 클릭



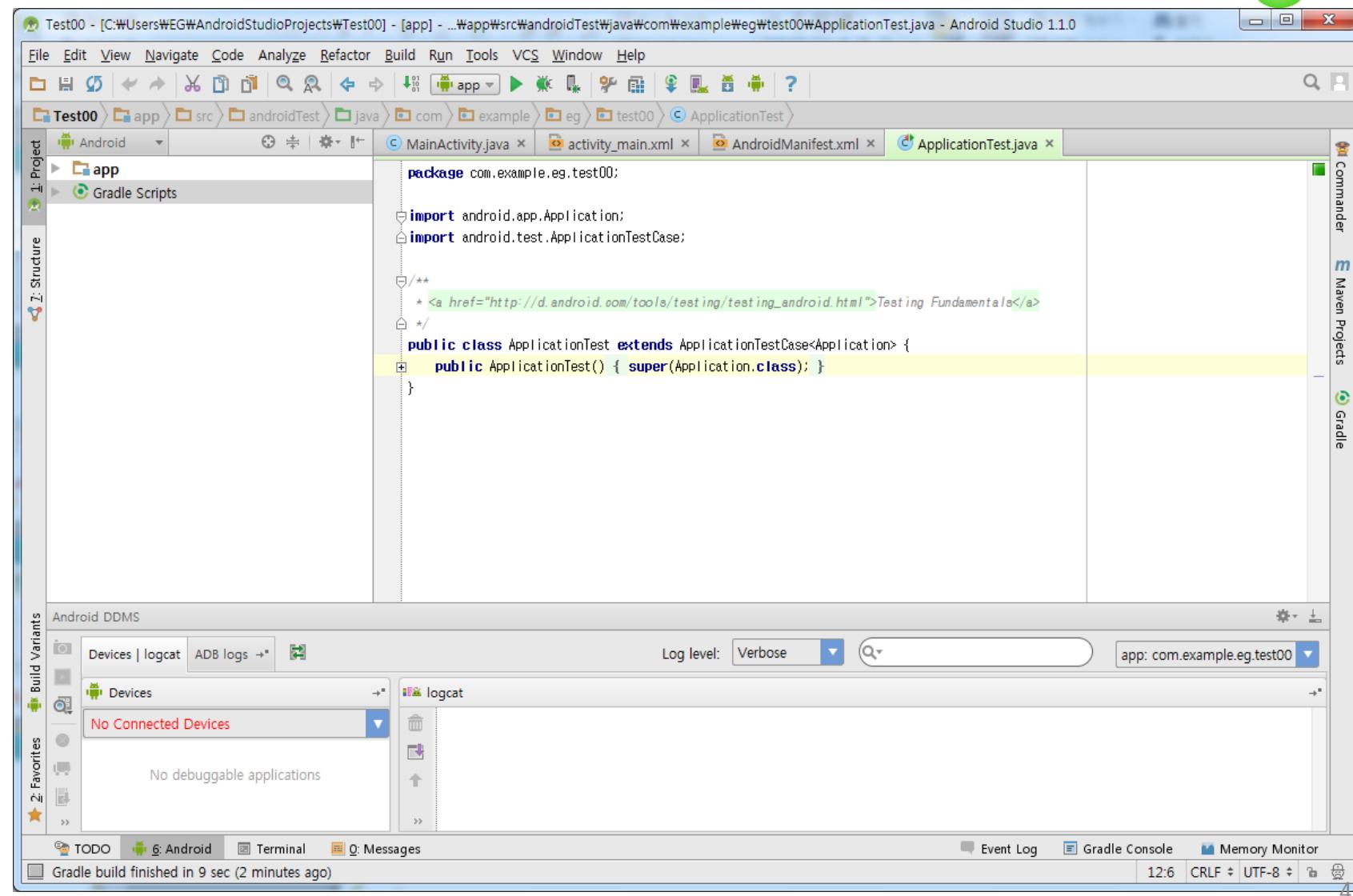
16. 클릭







실행 화면



The screenshot shows the Android Studio interface with the title "Test00 - [C:\Users\EG\AndroidStudioProjects\Test00] - [app] - ...app\src\AndroidTest\java\com\example\eg\test00\ApplicationTest.java - Android Studio 1.1.0". The main window displays the Java code for ApplicationTest.java:

```
package com.example.eg.test00;

import android.app.Application;
import android.test.ApplicationTestCase;

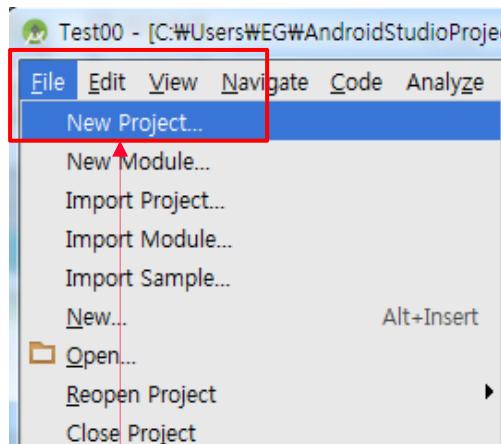
/**
 * <a href="http://d.android.com/tools/testing/testing_android.html">Testing Fundamentals</a>
 */
public class ApplicationTest extends ApplicationTestCase<Application> {
    public ApplicationTest() { super(Application.class); }
}
```

The bottom of the interface shows the Android DDMS tool with the logcat tab selected, displaying the message "No Connected Devices". The status bar at the bottom indicates "Gradle build finished in 9 sec (2 minutes ago)".

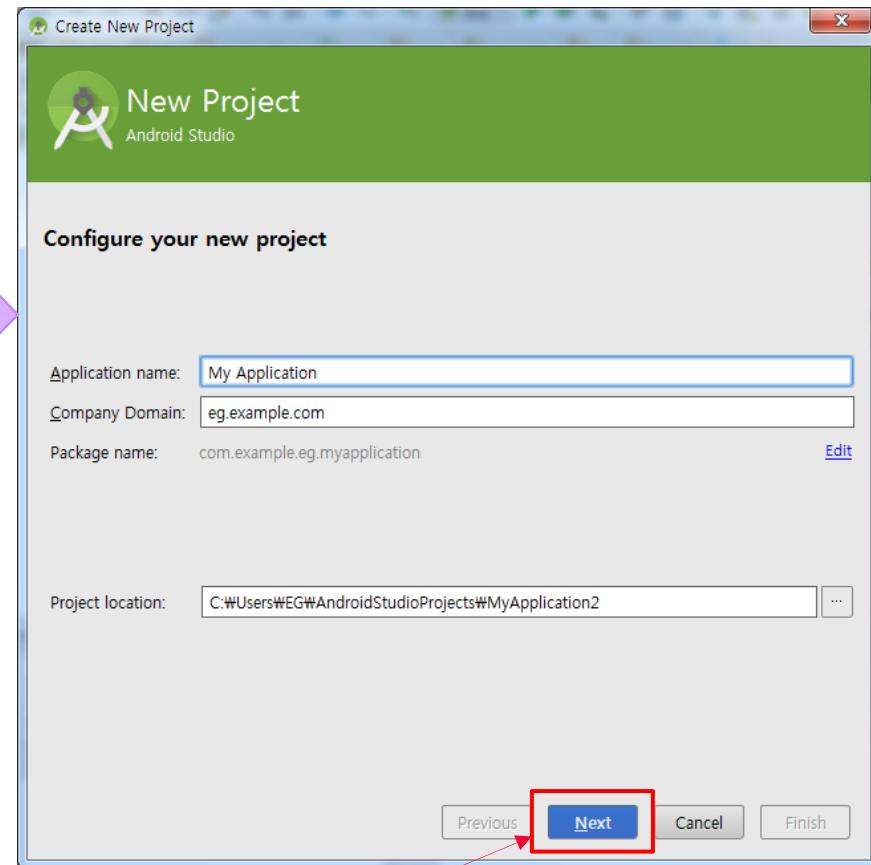


43

프로젝트 생성 및 테스트

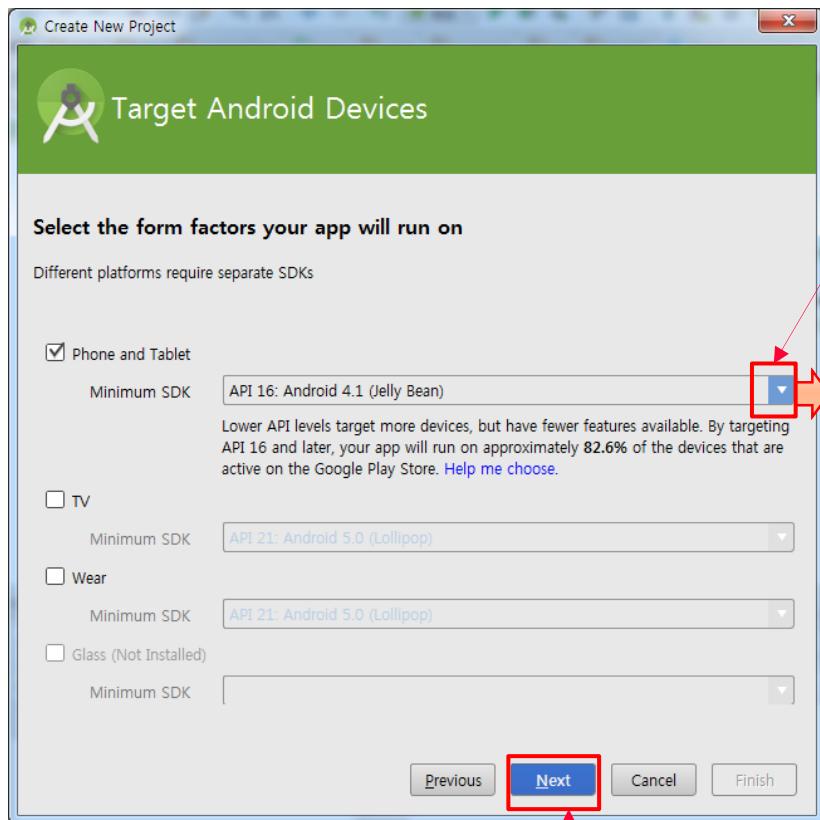


20. [File]→[New Project] 클릭



21. 클릭

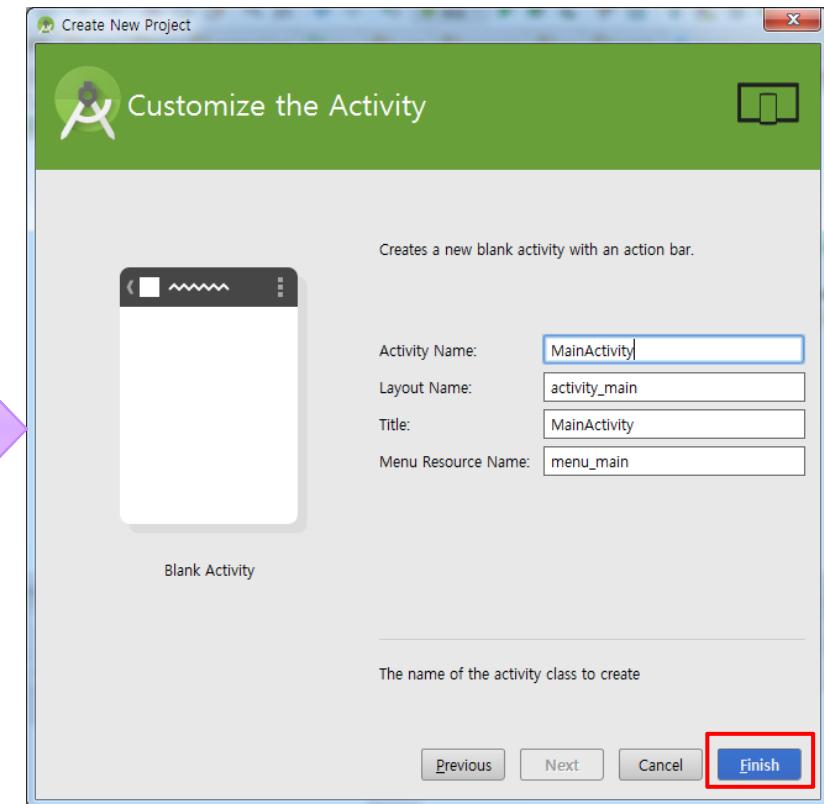
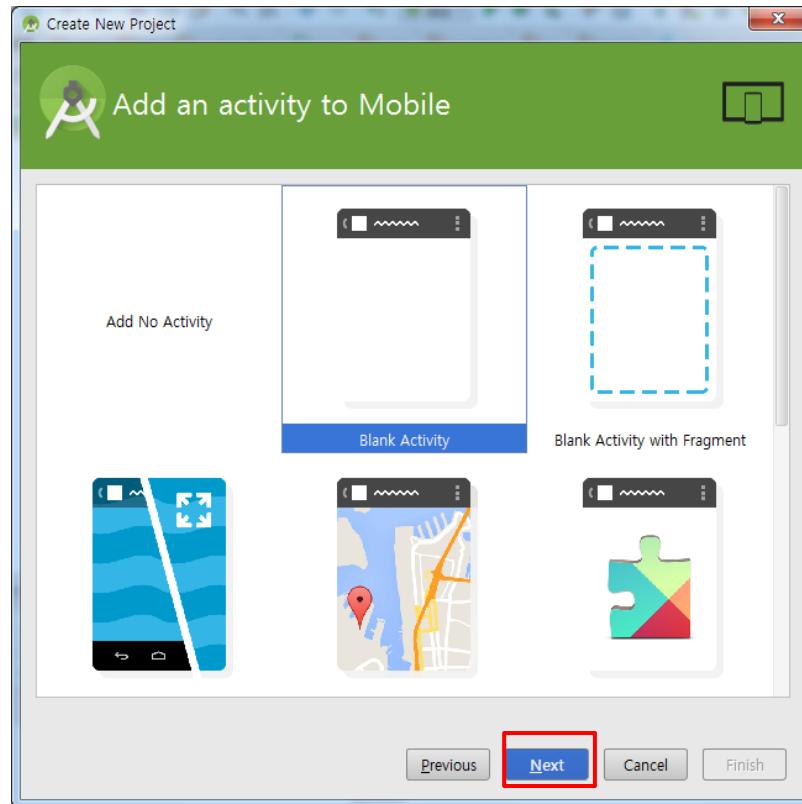




21. 클릭



22. 클릭





My Application - [C:\Users\EG\AndroidStudioProjects\MyApplication2] - [app] - ...app\src\main\res\layout\activity_main.xml - Android Studio 1.1.0

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MyApplication2 app src main res layout activity_main.xml

MainActivity.java activity_main.xml

Palette

- Layouts
 - FrameLayout
 - LinearLayout (Horizontal)
 - LinearLayout (Vertical)
 - TableLayout
 - TableRow
 - GridLayout
 - RelativeLayout
- Widgets
 - Plain TextView
 - Large Text
 - Medium Text
 - Small Text
 - Button
 - Small Button
 - RadioButton
 - CheckBox
 - Switch
 - ToggleButton
 - ImageButton
 - ImageView
 - ProgressBar (Large)
 - ProgressBar (Normal)
 - ProgressBar (Small)
 - SeekBar
 - RatingBar
 - Spinner
 - WebView
- Text Fields
 - Plain Text
 - Person Name
 - Password
 - Password (Numeric)
 - E-mail
 - Phone

Nexus 4 AppTheme MainActivity Android 21

Device Screen RelativeLayout TextView - @string/hello_world

Hello world!

Properties

layout:width	match_parent
layout:height	match_parent
style	
accessibilityLiveRegion	
alpha	
background	
backgroundTint	
backgroundTintMode	
clickable	<input type="checkbox"/>
contentDescription	
elevation	
focusable	<input type="checkbox"/>
focusableInTouchMode	<input type="checkbox"/>
gravity	
id	
ignoreGravity	
importantForAccessibility	

Build Variants 2: Favorites

Terminal Android Messages TODO

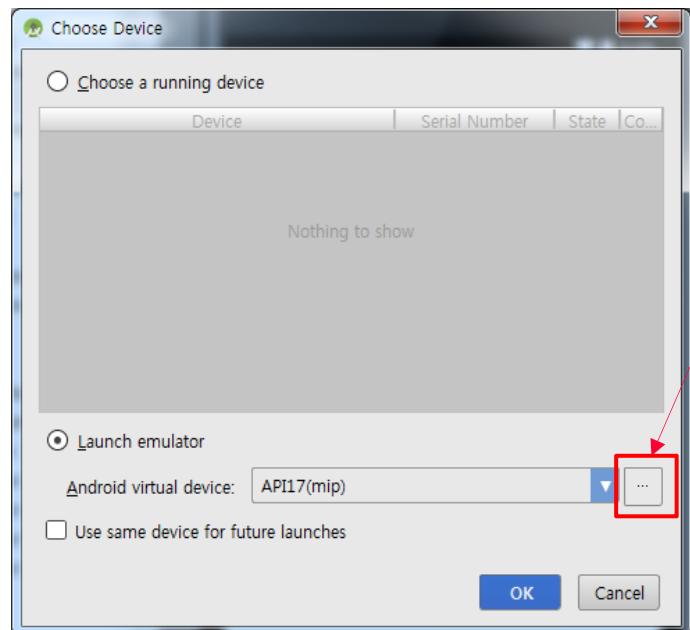
Gradle build finished in 19 sec (moments ago)

Event Log Gradle Console Memory Monitor n/a n/a

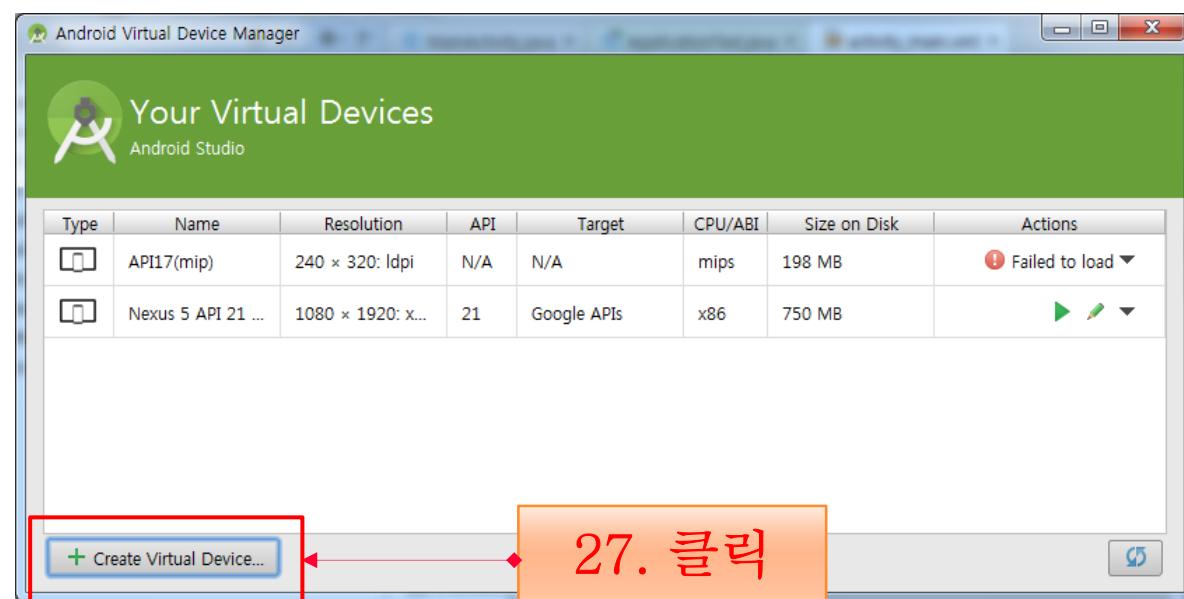
25. 클릭

The screenshot shows the Android Studio interface with the project 'My Application' open. The layout editor is active, displaying 'activity_main.xml'. The toolbar at the top has several icons, with the green play button highlighted by a red box. In the top right corner, there is an orange box containing the text '25. 클릭'. The preview window shows a smartphone with the text 'Hello world!' on its screen. The palette on the left lists various layout types and widgets, with 'Widgets' currently selected. The properties panel on the right shows basic attributes for a view. The bottom navigation bar includes tabs for Terminal, Android, Messages, and TODO, along with status information about the build.

AVD 추가 세팅

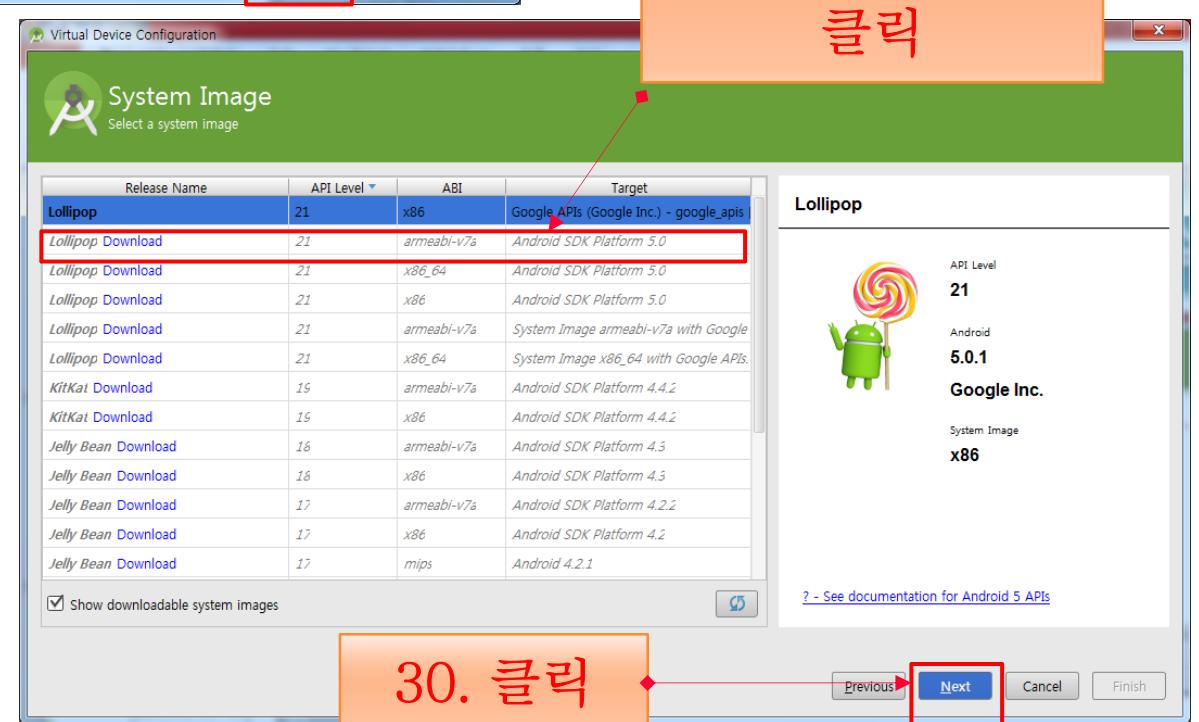
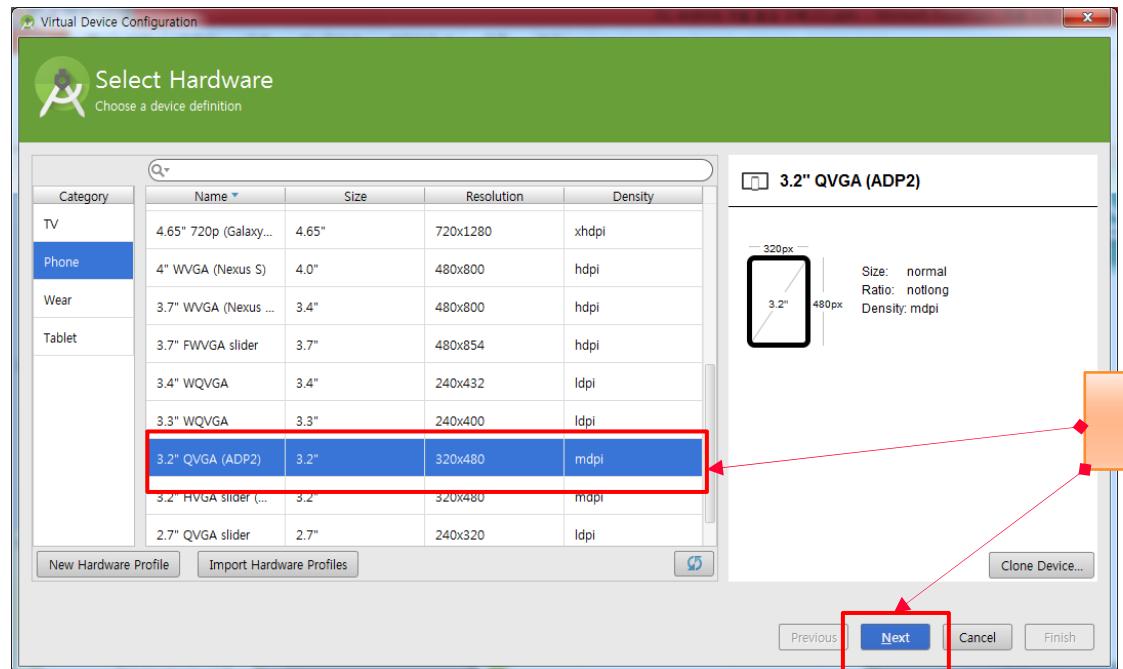


26. 클릭

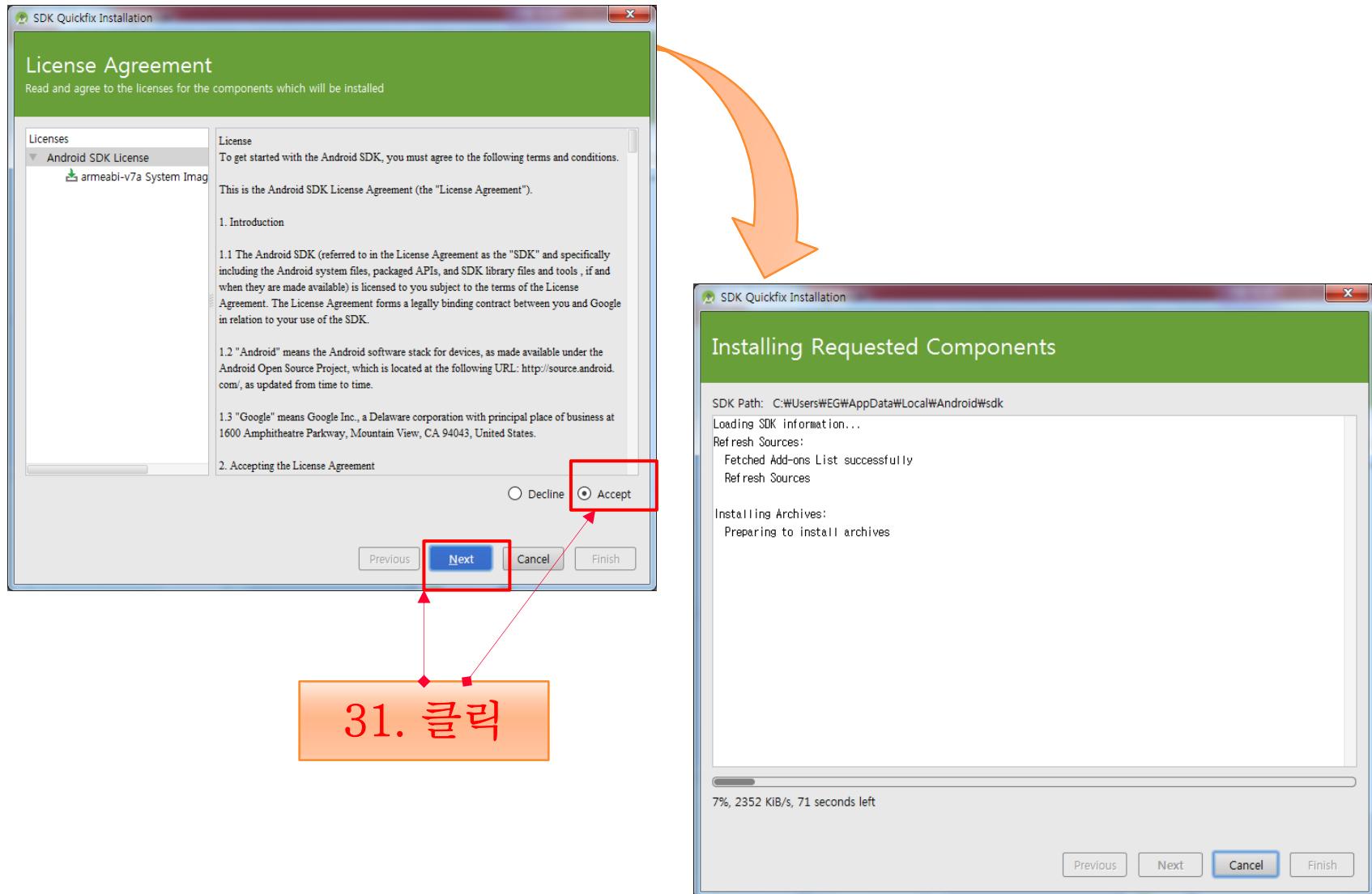


27. 클릭

AVD 추가 세팅

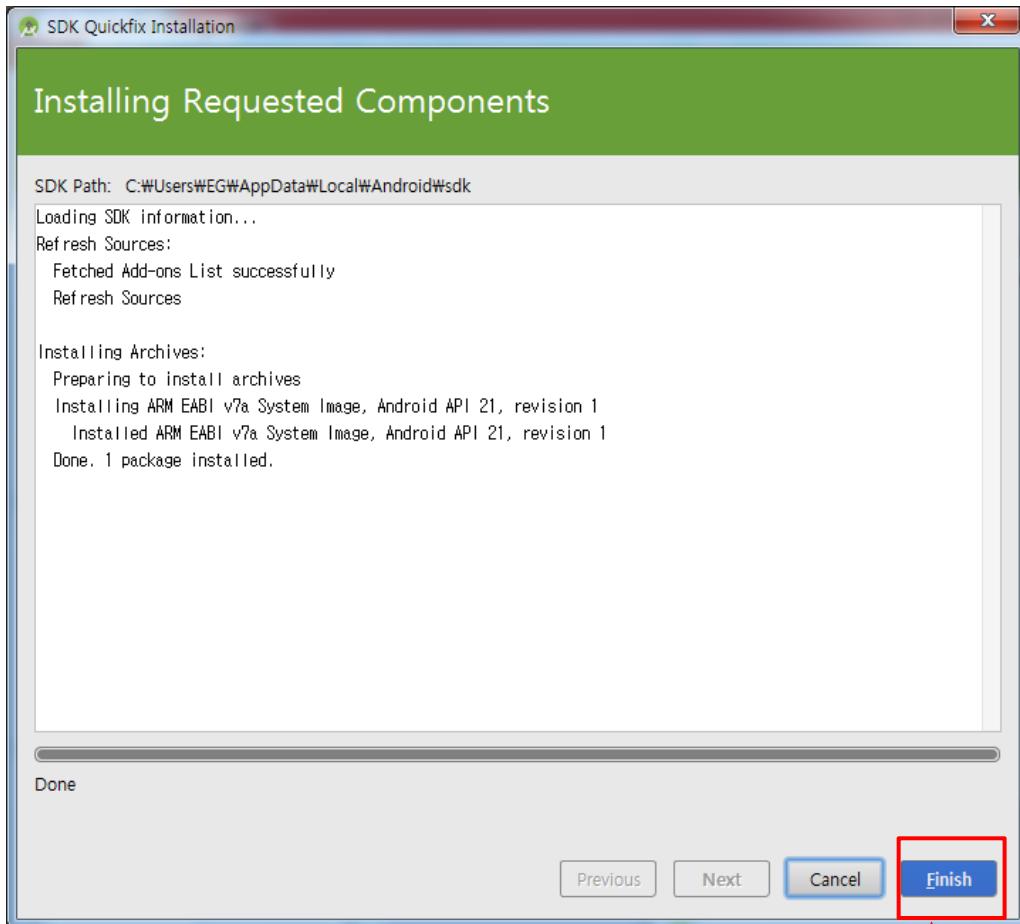


AVD 추가 세팅



31. 클릭

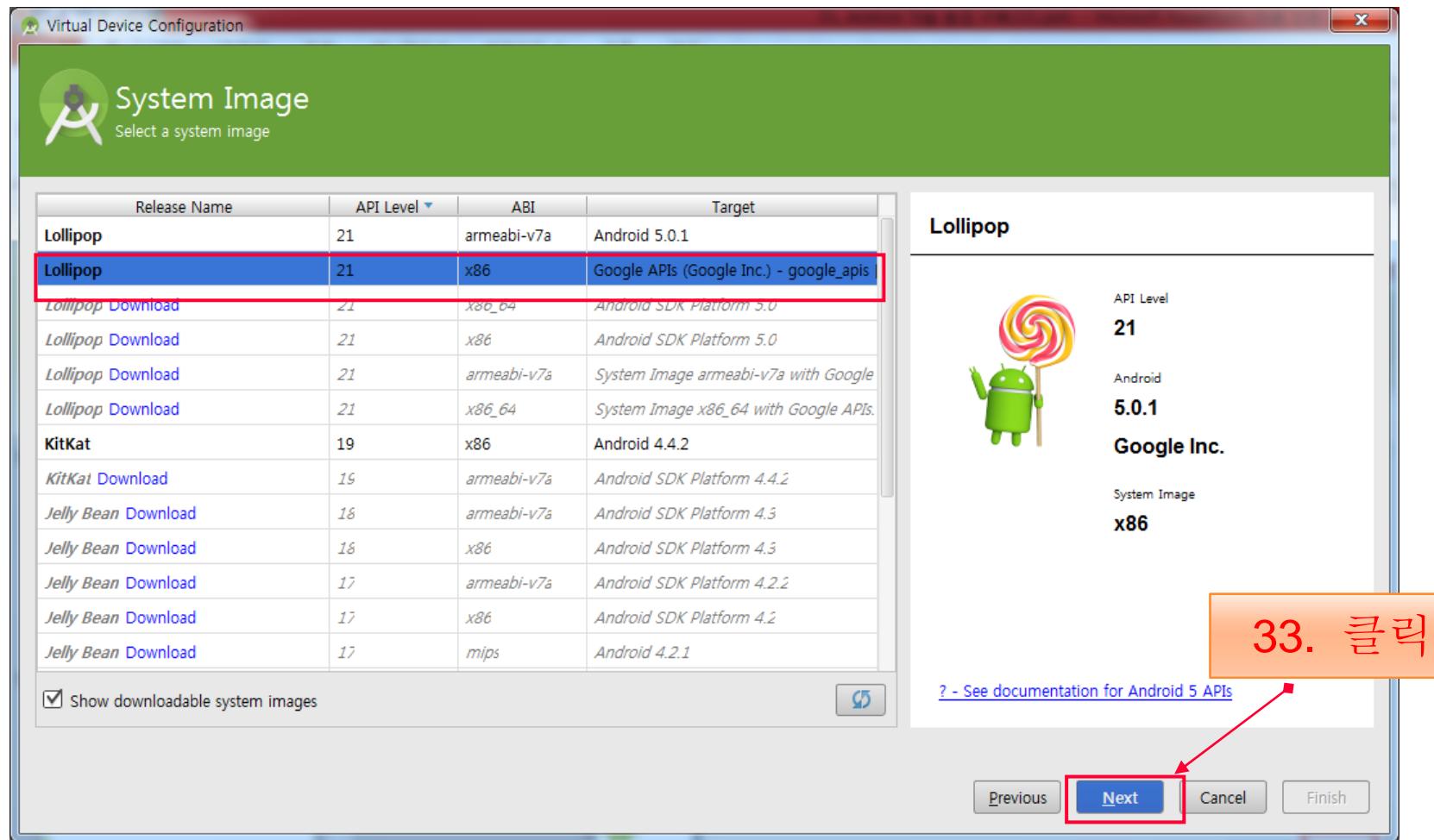
AVD 추가 세팅



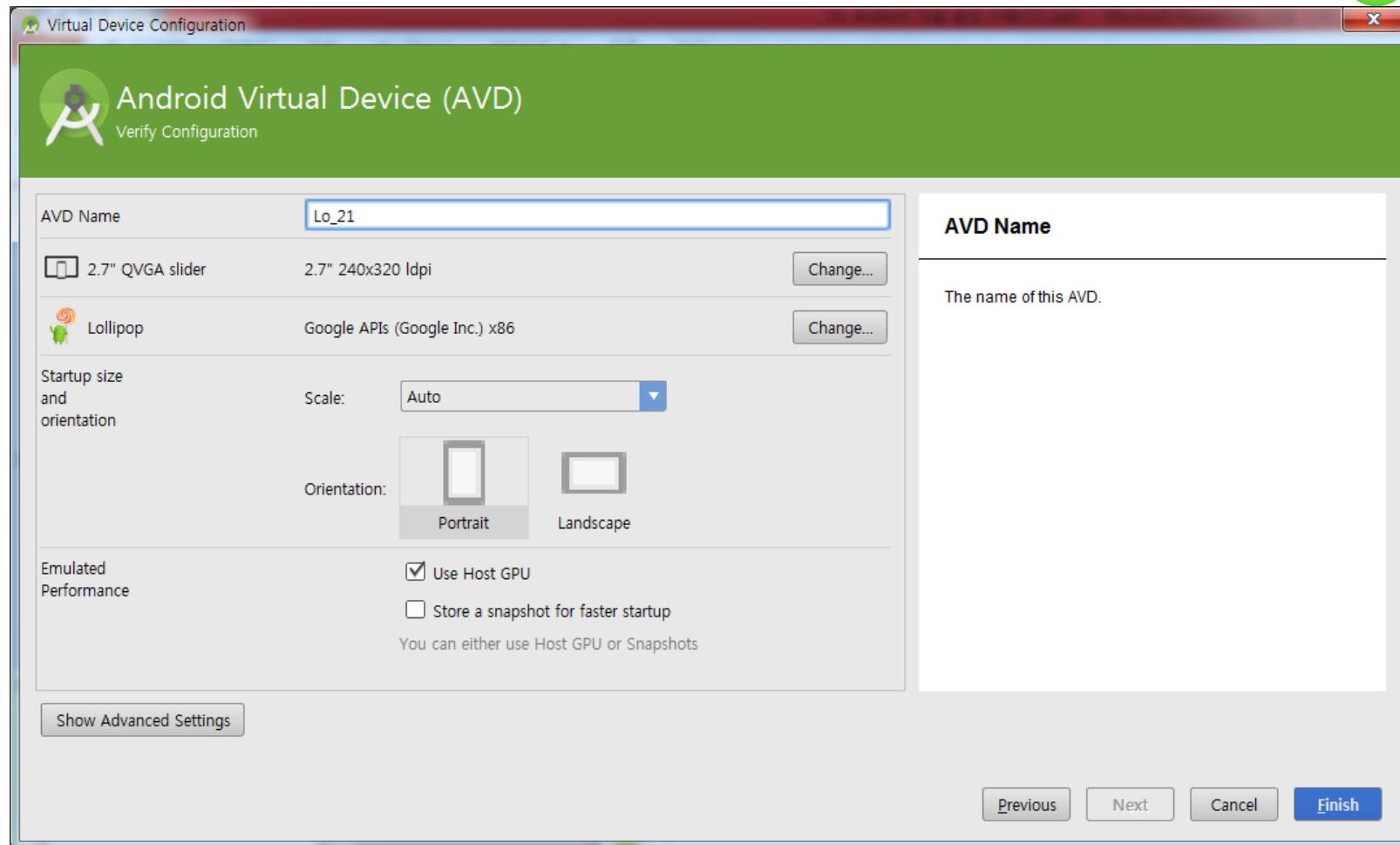
32. 클릭

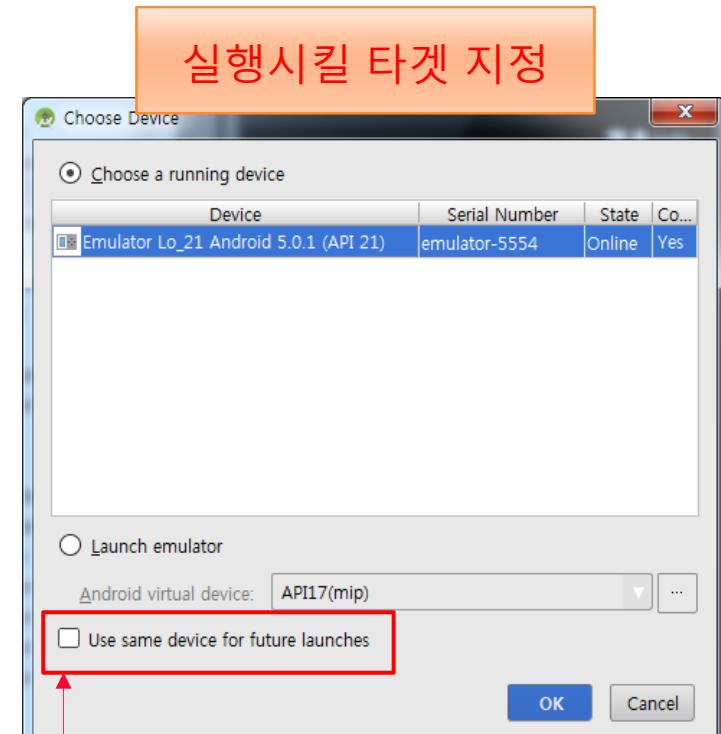
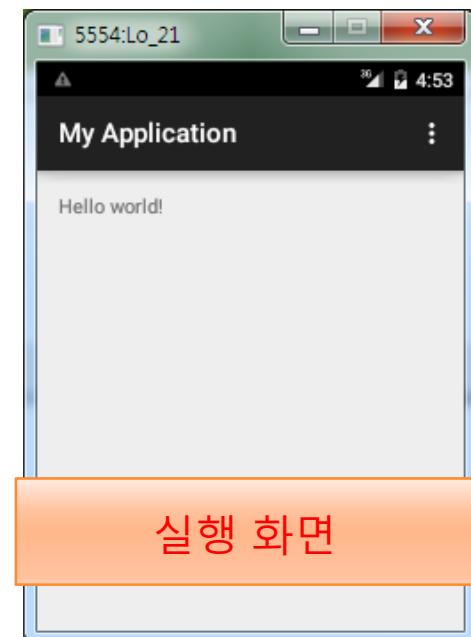


AVD 실행



AVD 이름 및 환경 설정







AVD 정리



- AVD는 가상 안드로이드 앱 가상 장치 환경
- 개발한 앱이 실행할 장치를 세팅
- 휴대폰 및 태블릿 등의 장치의 환경에 맞도록 세팅
- 세팅시 주의 점
 - ◎ 개발한 앱이 어느 장치 및 환경에서 작동할지를 앱 개발시에 미리 지정하고 앱을 만드는 것이 중요





세팅 및 저장 위치



- 프로젝트 저장 위치

C:\Users\EG(사용자계정)\AndroidStudioProjects

- Android SDK 위치

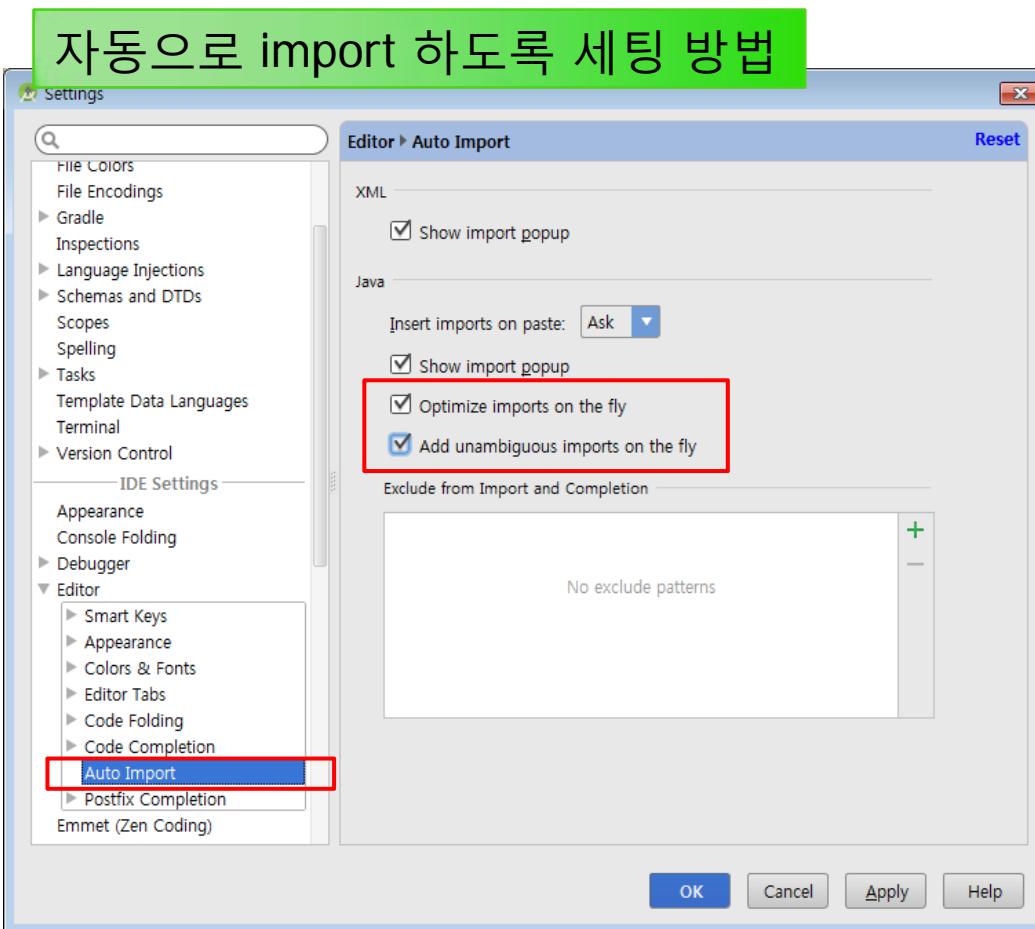
C:\Users\EG(사용자계정)\AppData\Local





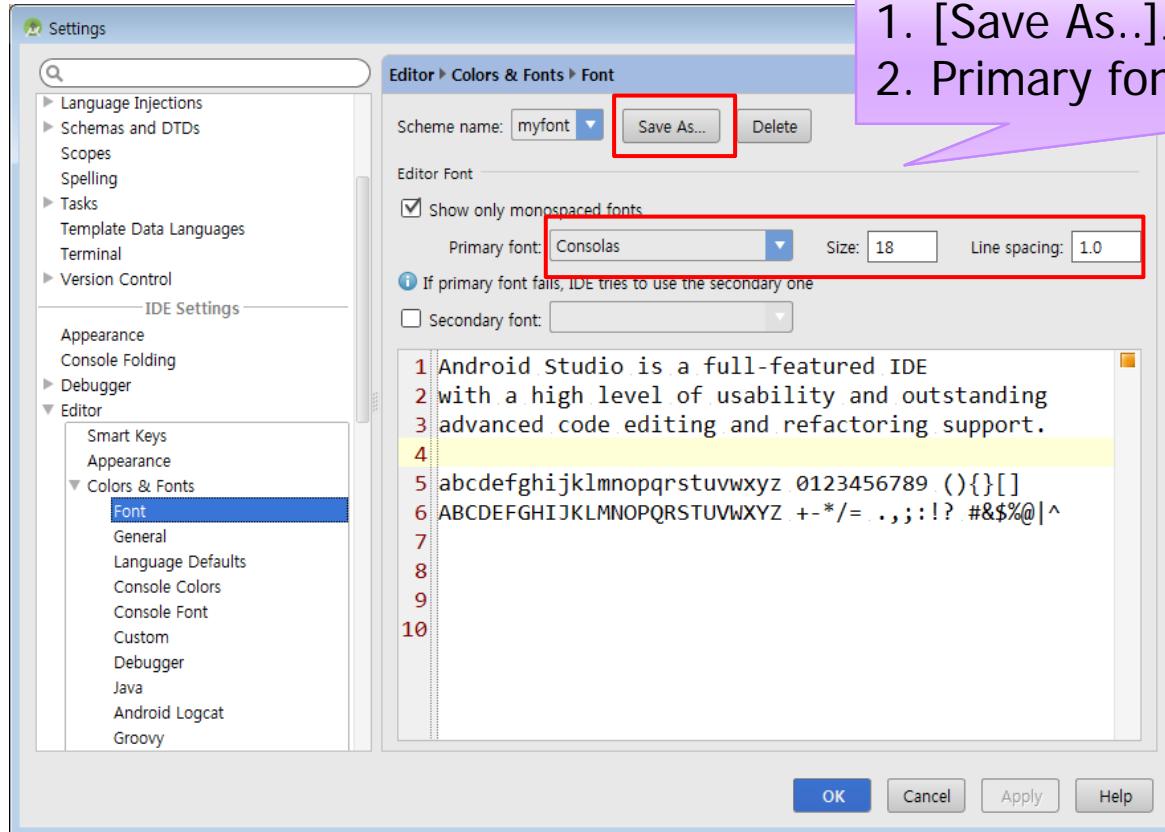
Import 방법

Alt + Enter





Editor 글씨 크기 변경



1. [Save As..]로 새로운 이름을 만든다.
2. Primary font : Consolas 지정



Editor 줄 번호 넣기

