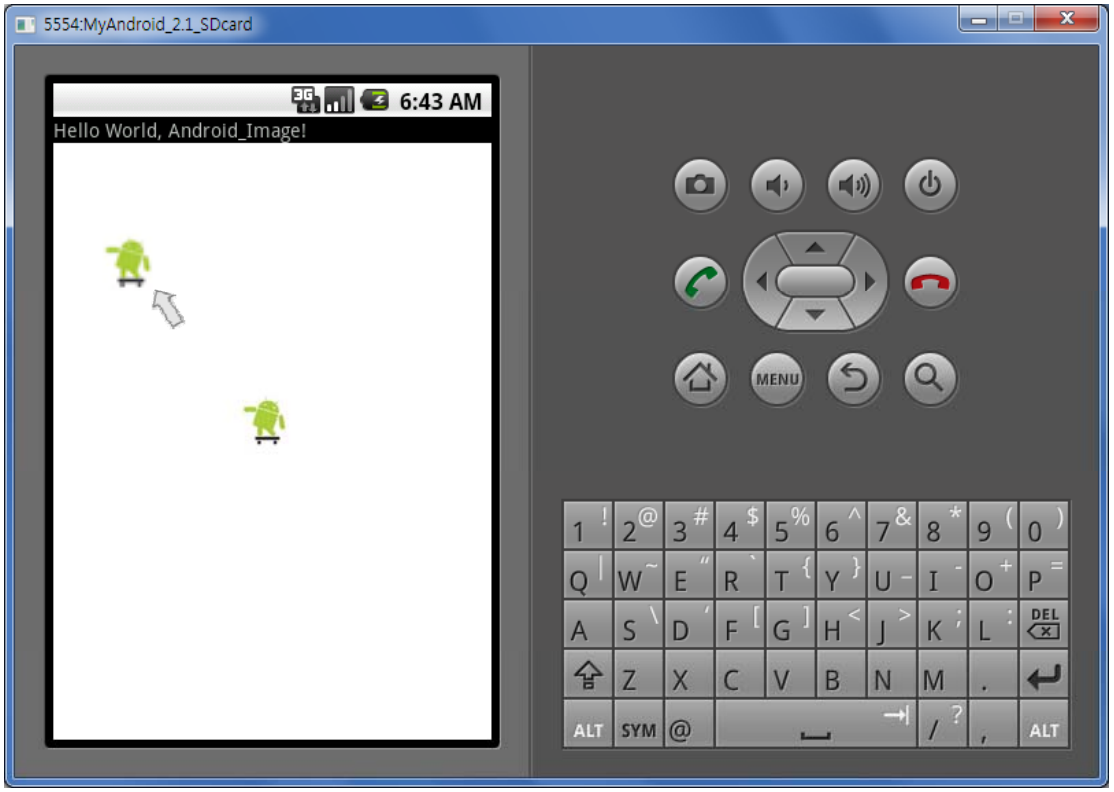
Graphic 2D


5554:MyAndroid_2.1_SDcard
6:43 AM
Hello World, Android_Image!
MENU

학습 목표

교육 목표

- CustomView 구현
- Keyboard 입력 처리
- Touch Screen 처리
- 실습 I
  - Android Image 화면 중앙 출력 구현
- 실습 II
  - Android KeyEvent 처리 구현
- 실습 III
  - Android Screen Touch Event 처리 구현

Navigation voice

Traffic view

Street View

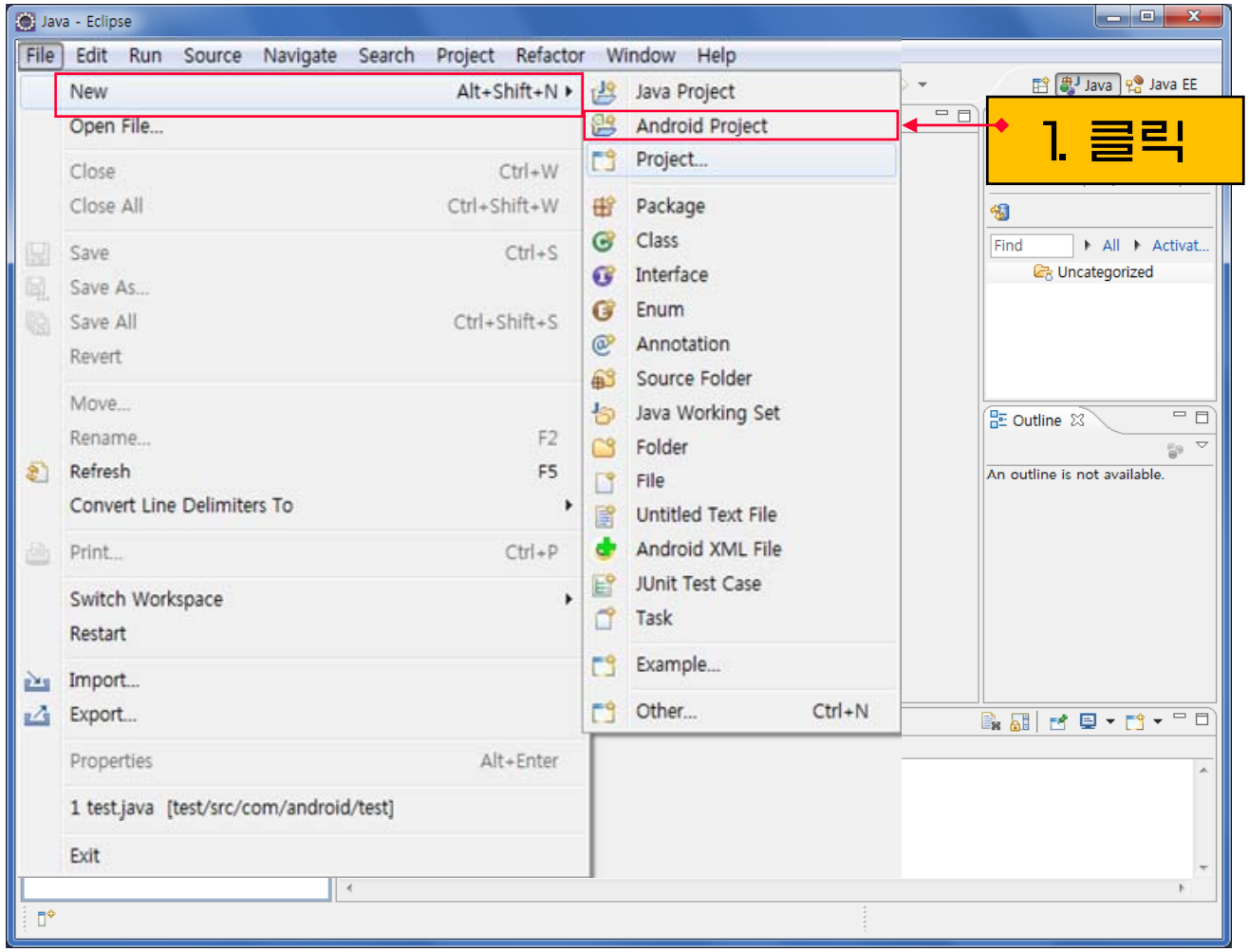
Android Image

- Android 지원 Image 형식
  - JPEG
    - Joint Photographic Experts Group
  - PNG
    - Portable Network Graphics
  - GIF
    - Graphics Interchange Format
  - BMP

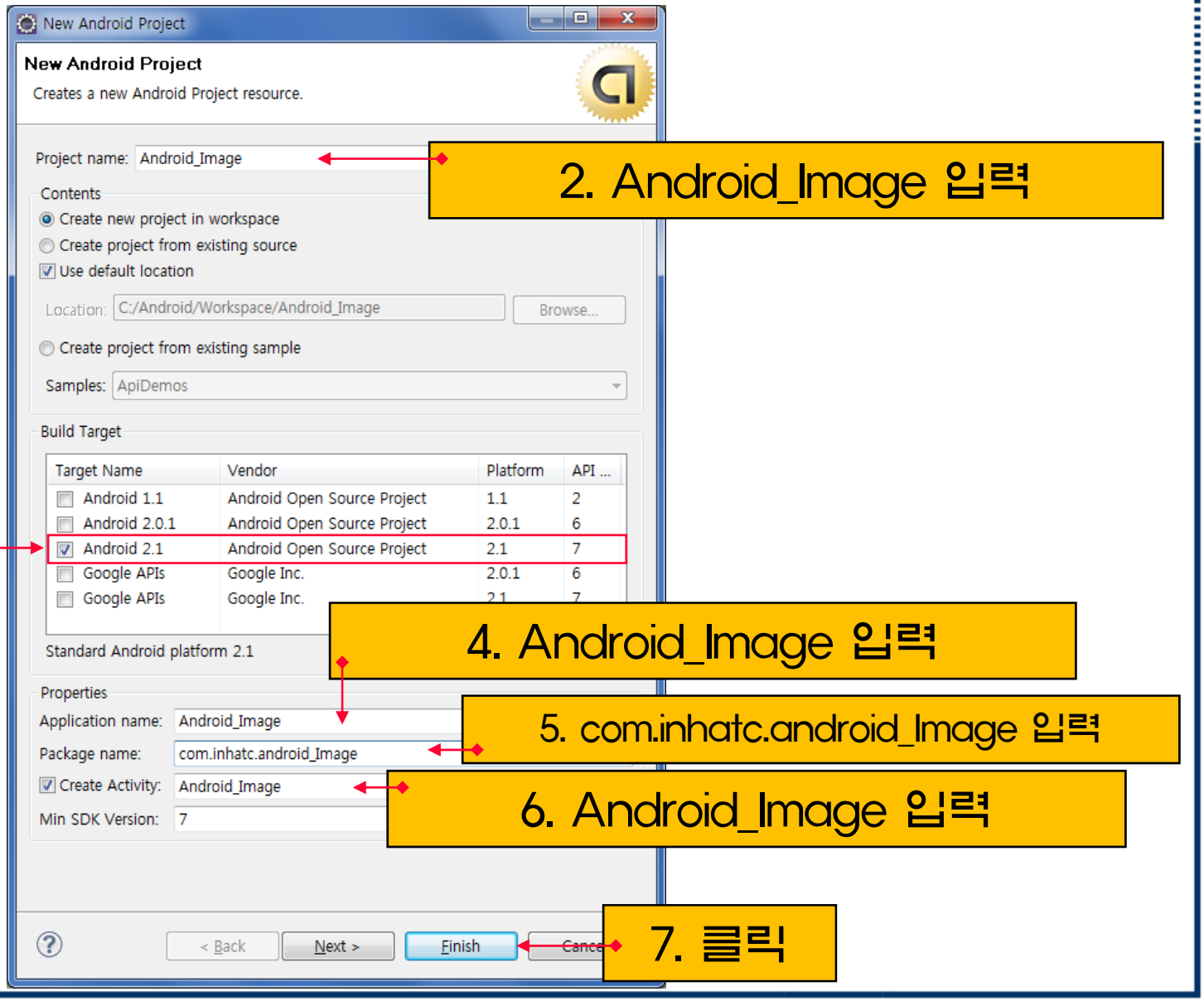
Android Custom View 구현 (1)

Android 프로젝트 생성

- 프로젝트 명 : Android_Image

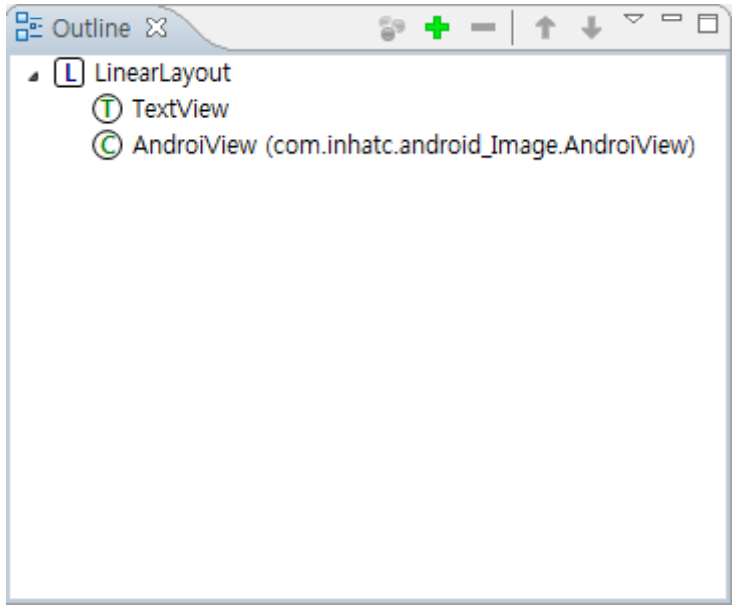


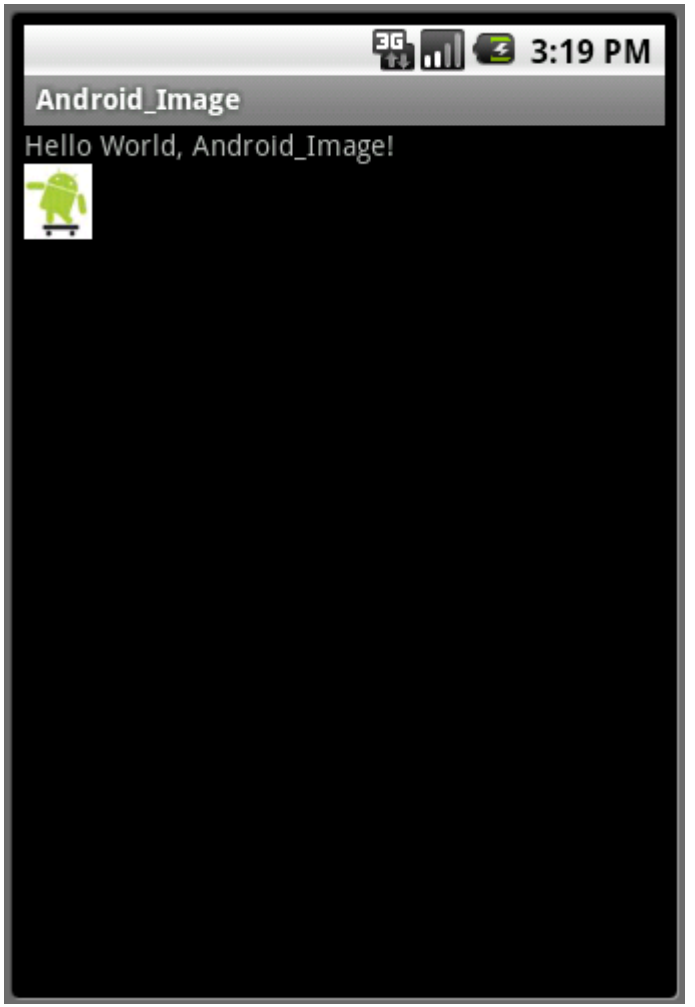
Android Custom View 구현 (2)



Android Custom View 구현 (3)

UI 설계

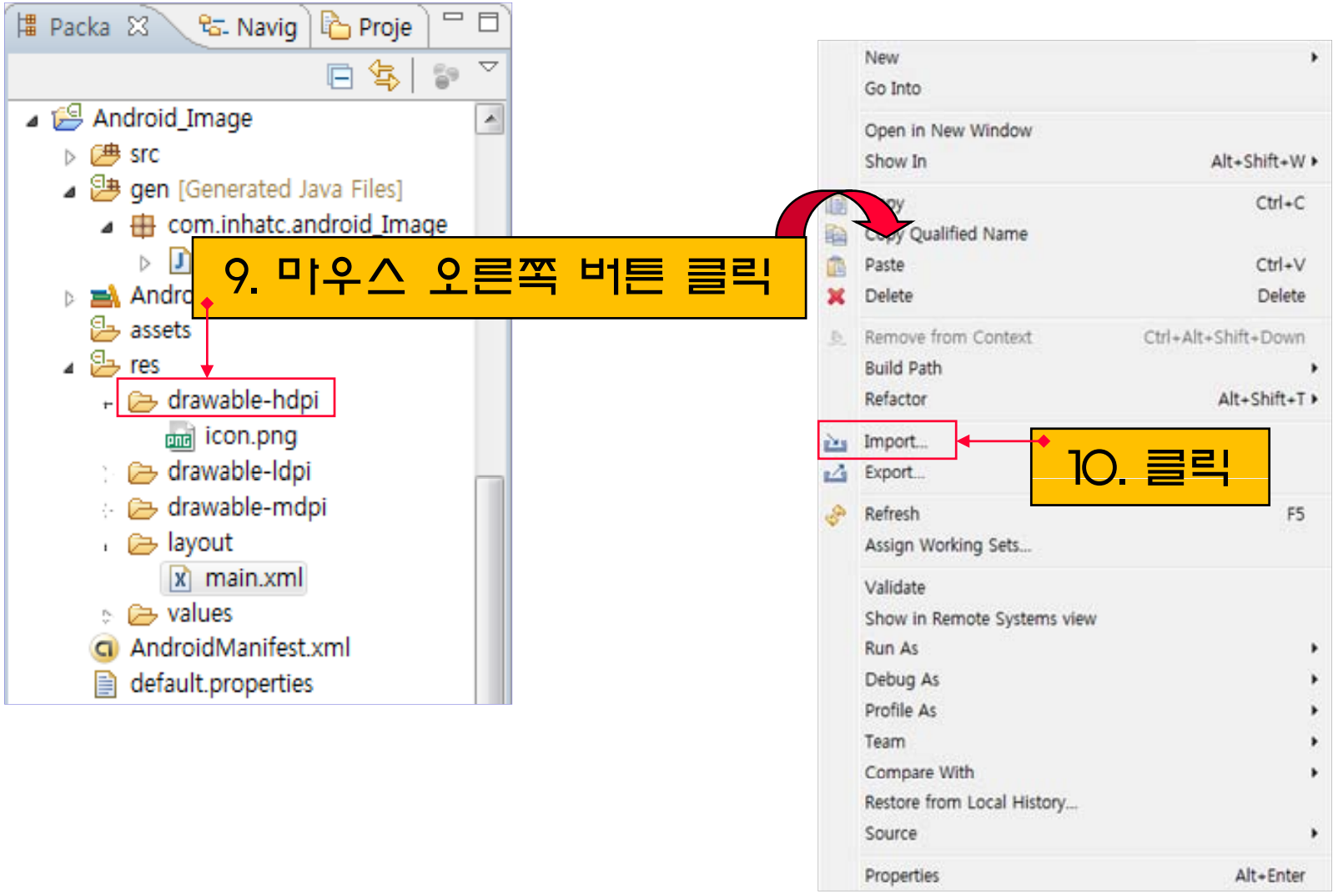




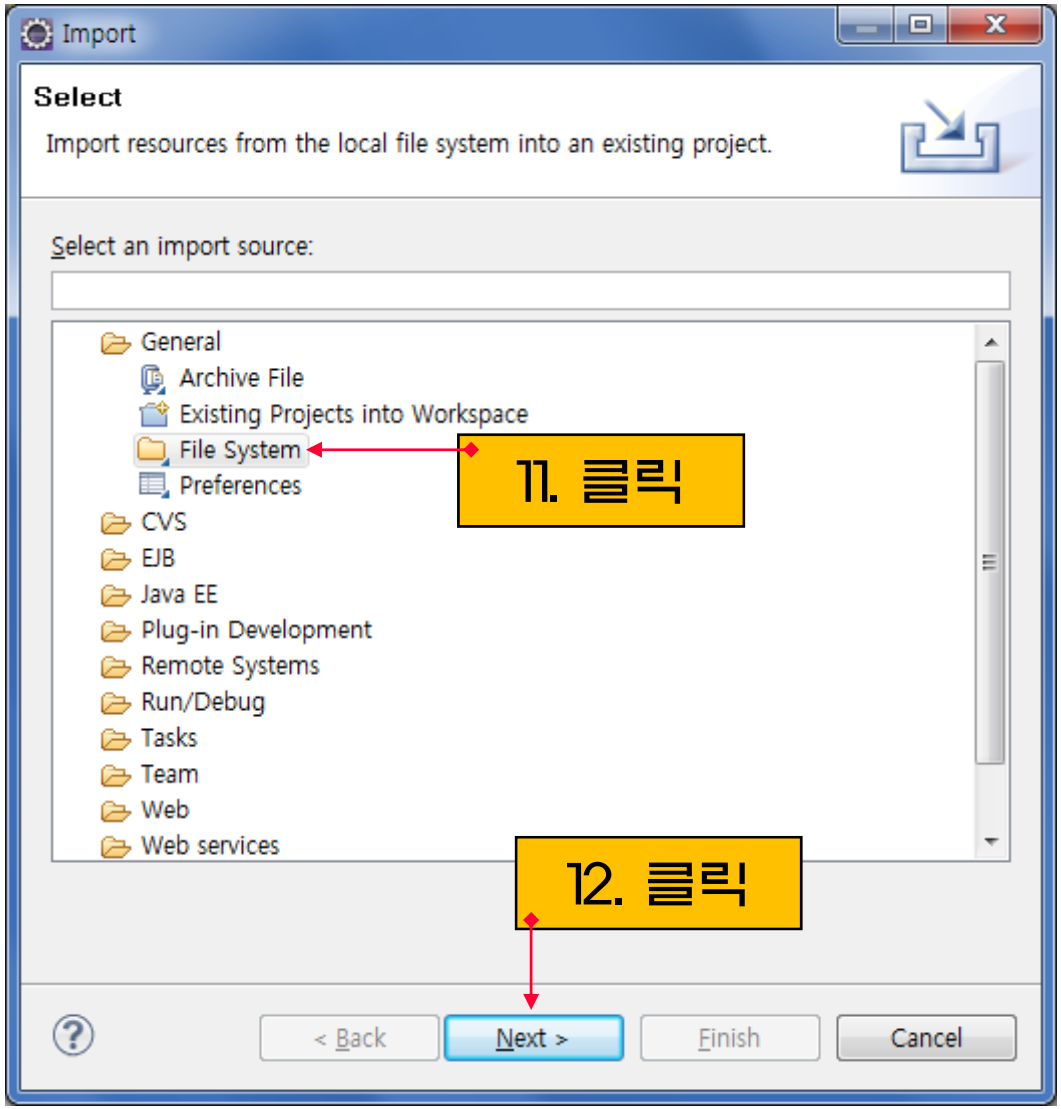
8. UI 설계 및 속성 지정

Android Custom View 구현 (4)

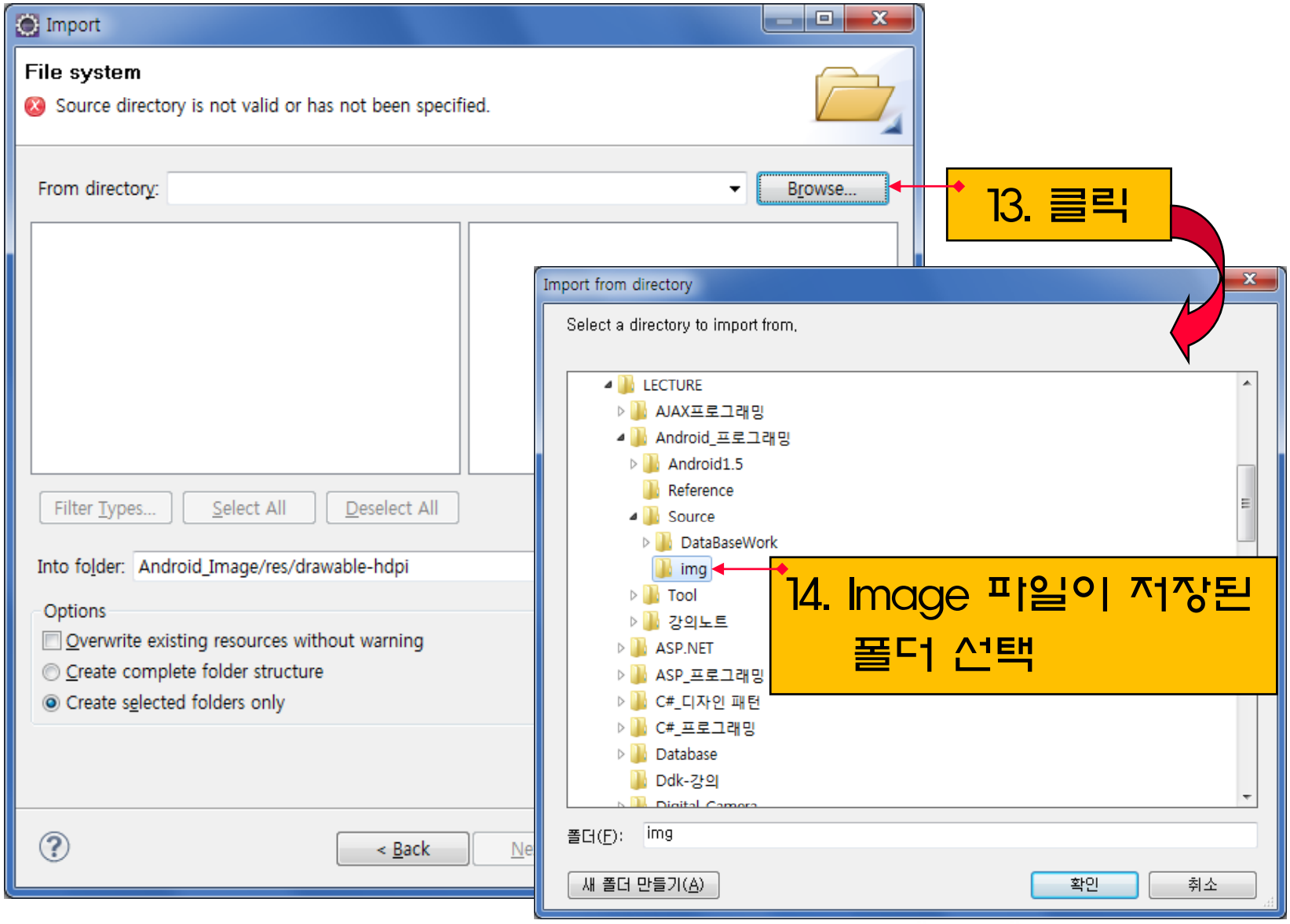
❖ Image import



Android Custom View 구현 (5)



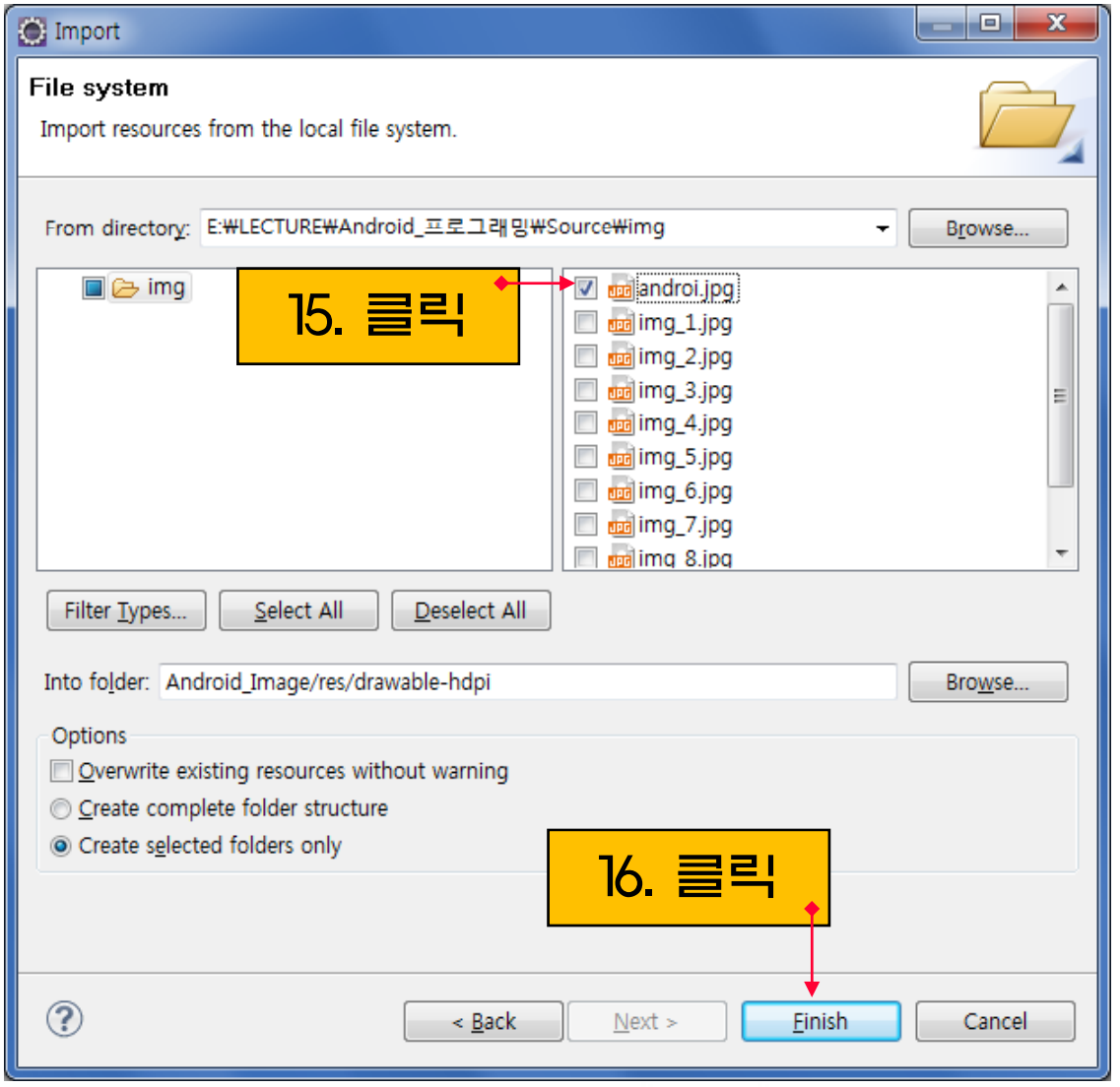
Android Custom View 구현 (6)



Android Custom View 구현 (7)

❖ Image 파일 선택

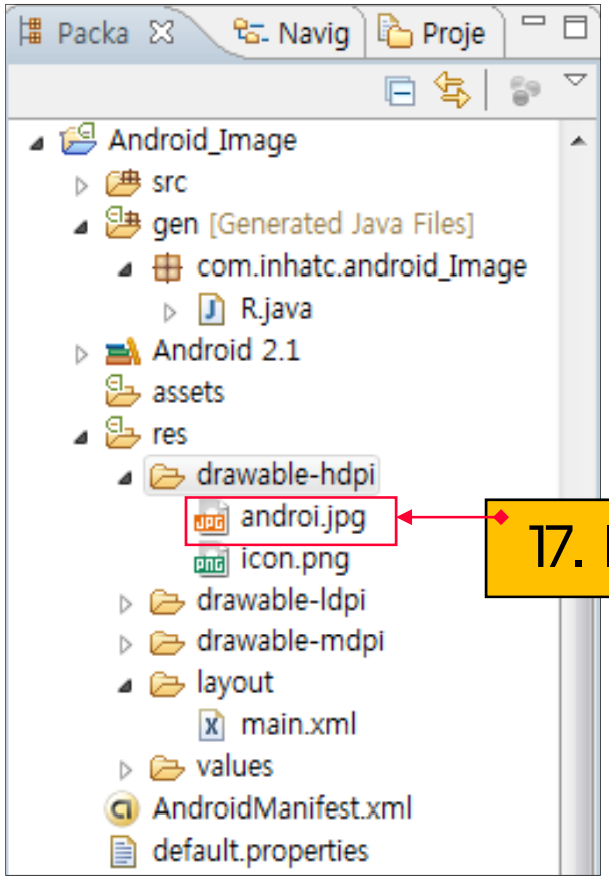
◆ androi.jpg



Android Custom View 구현 (8)

❖ Image 파일 import 확인

◆ androi.jpg



17. Image 파일 import 확인

Android Custom View 구현 (9)

Android_Image.java 수정

❖ TitleBar 제거

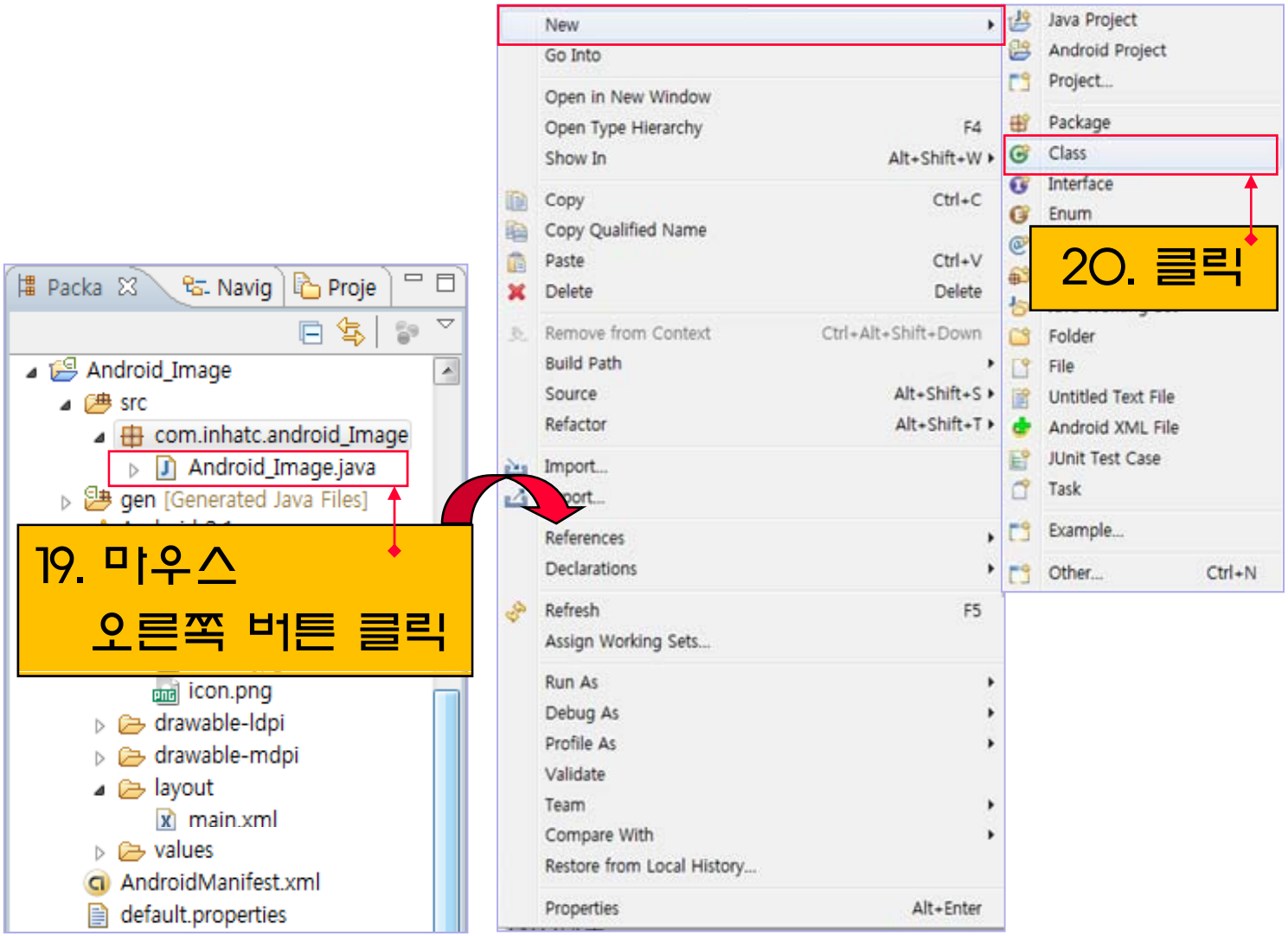
*Android_Image.java

```
1  package com.inhatc.android_Image;
2
3  import android.app.Activity;
4  import android.os.Bundle;
5  import android.view.Window;
6
7  public class Android_Image extends Activity {
8      /** Called when the activity is first created. */
9      @Override
10     public void onCreate(Bundle savedInstanceState) {
11         super.onCreate(savedInstanceState);
12
13         requestWindowFeature(Window.FEATURE_NO_TITLE); //TitleBar 제거
14
15         setContentView(R.layout.main);
16     }
17 }
```

18. Coding

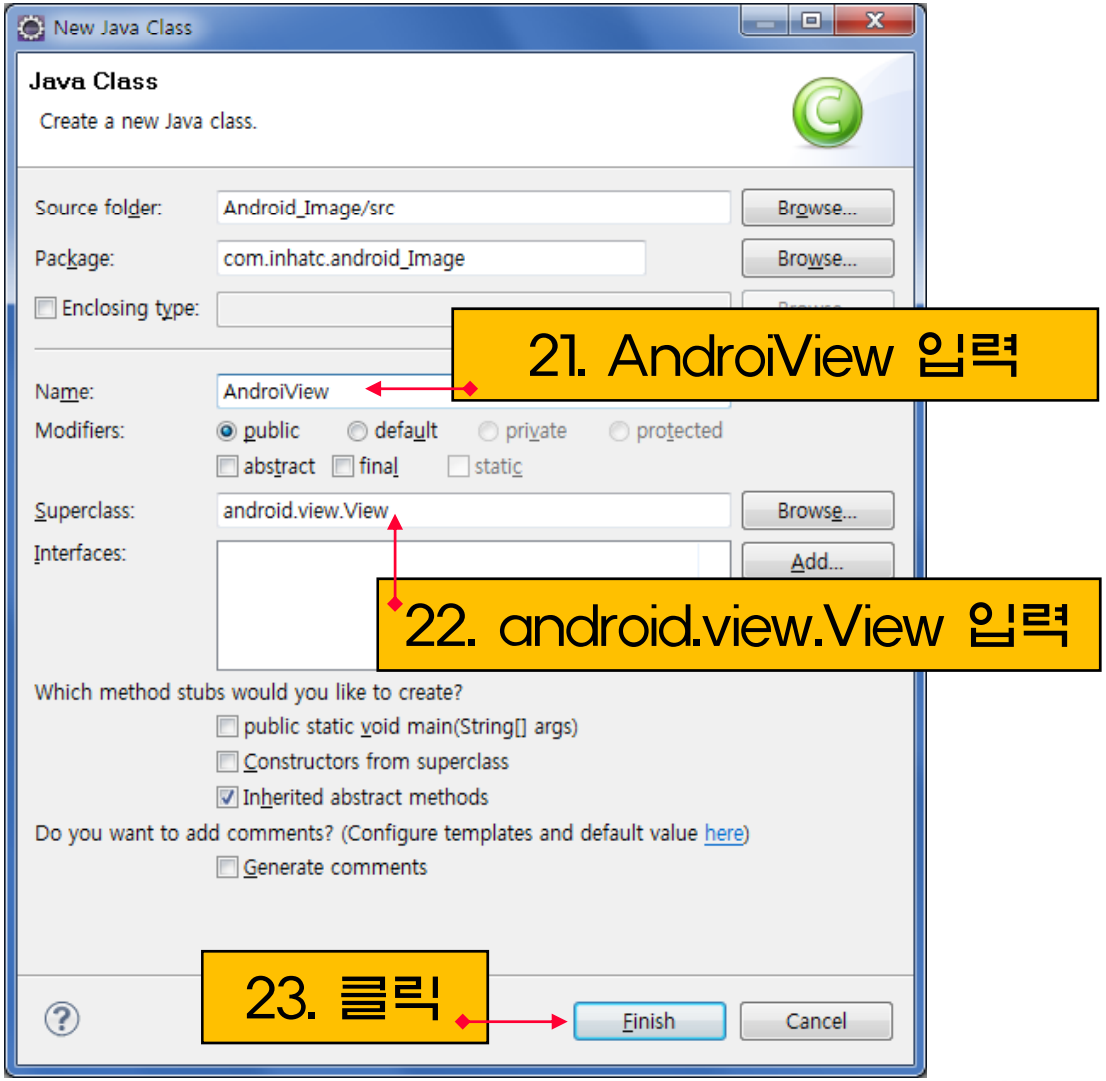
Android Custom View 구현 (10)

New Class 추가



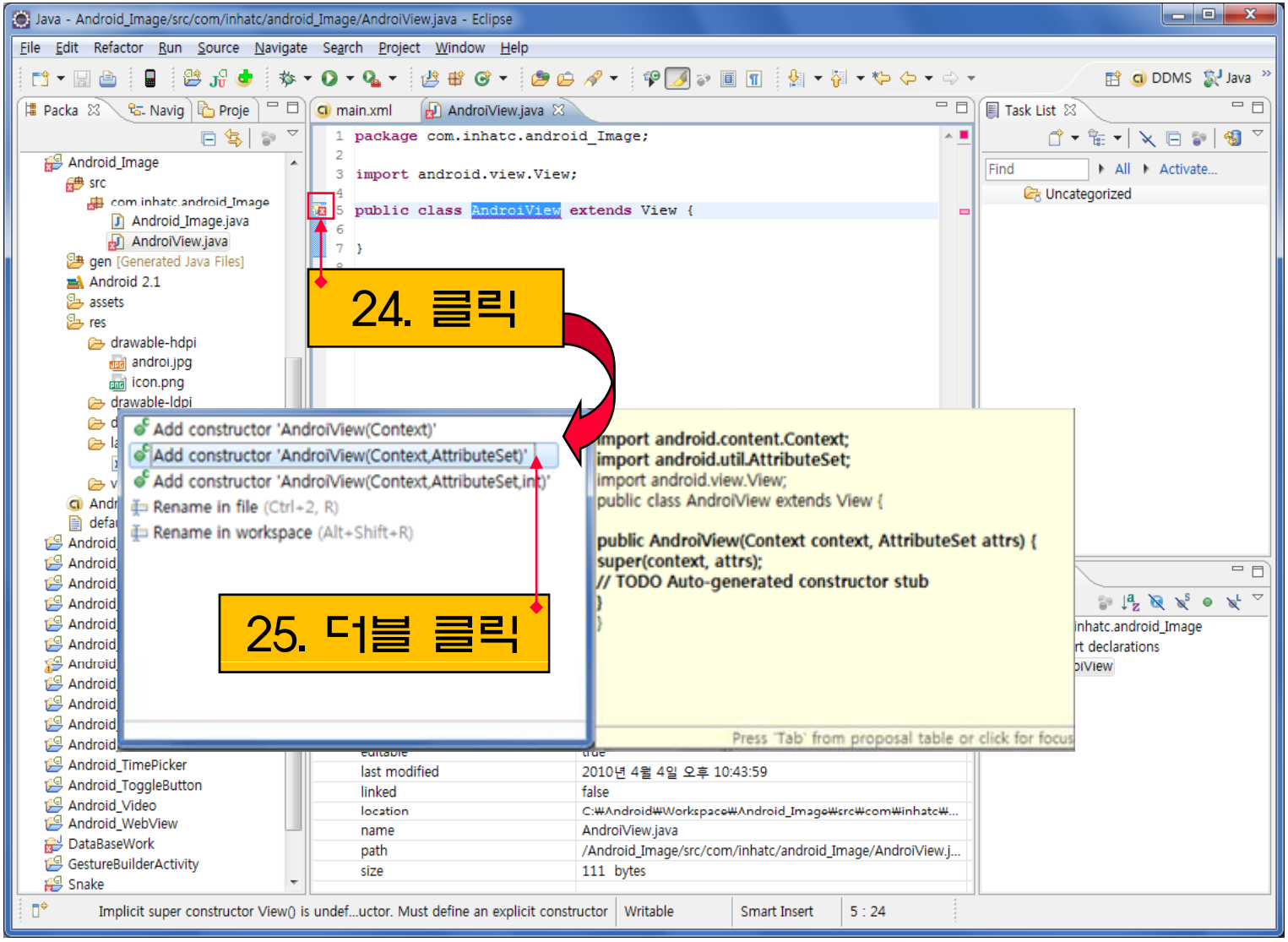
Android Custom View 구현 (11)

❖ AndroiView Class



Android Custom View 구현 (12)

❖ AndroidView 생성자 추가



Android Custom View 구현 (13)

❖ AndroidView 생성자 추가 확인

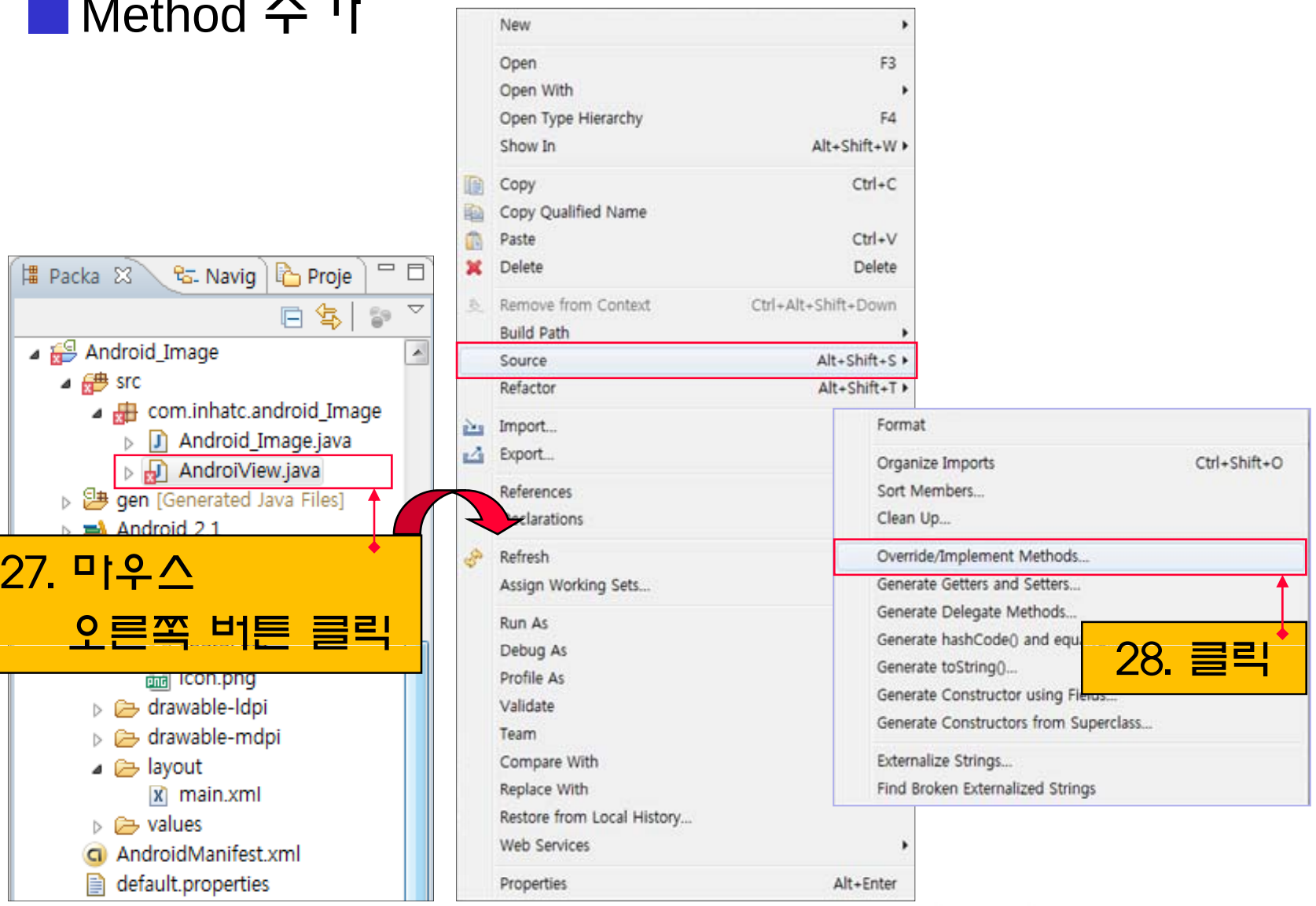
*AndroiView.java

```
1  package com.inhatc.android_Image;
2
3  import android.content.Context;
4  import android.util.AttributeSet;
5  import android.view.View;
6
7  public class AndroiView extends View {
8
9      public AndroiView(Context context, AttributeSet attrs) {
10         super(context, attrs);
11         // TODO Auto-generated constructor stub
12     }
13
14 }
```

26. AndroidView 생성자 추가 확인

Android Custom View 구현 (14)

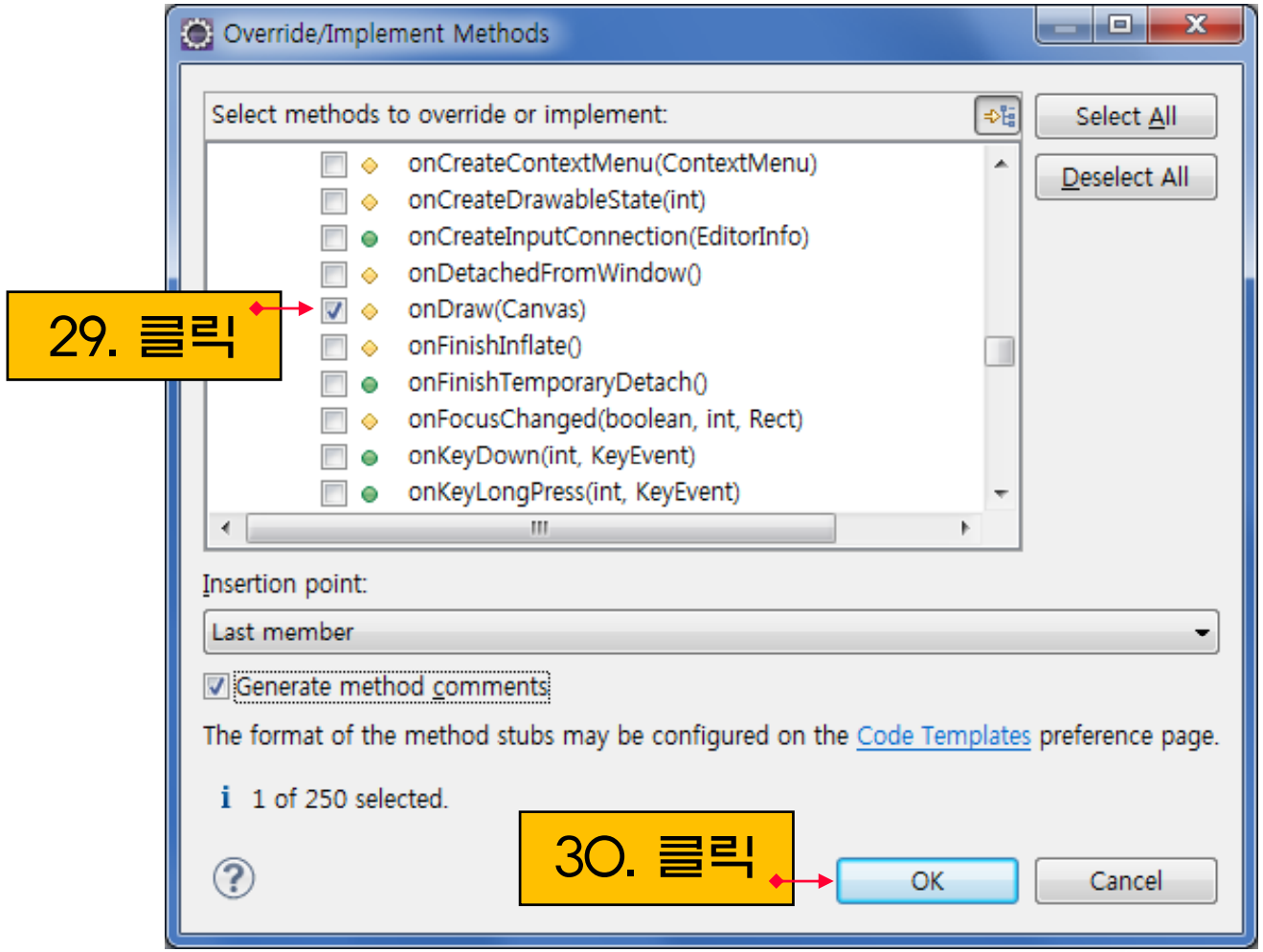
Method 추가



Android Custom View 구현 (15)

Method 추가

- onDraw(Canvas) 선택



Android Custom View 구현 (16)

*AndroiView.java

```
1  package com.inhatc.android_Image;
2
3  import android.content.Context;
4  import android.graphics.Canvas;
5  import android.util.AttributeSet;
6  import android.view.View;
7
8  public class AndroiView extends View {
9
10     public AndroiView(Context context, AttributeSet attrs) {
11         super(context, attrs);
12         // TODO Auto-generated constructor stub
13     }
14
15     /* (non-Javadoc)
16      * @see android.view.View#onDraw(android.graphics.Canvas)
17      */
18     @Override
19     protected void onDraw(Canvas canvas) {
20         // TODO Auto-generated method stub
21         super.onDraw(canvas);
22     }
23
24 }
```

31. onDraw(Canvas) method 추가 확인

Android Custom View 구현 (17)

Main.xml 수정

❖ AndroidView 추가

main.xml

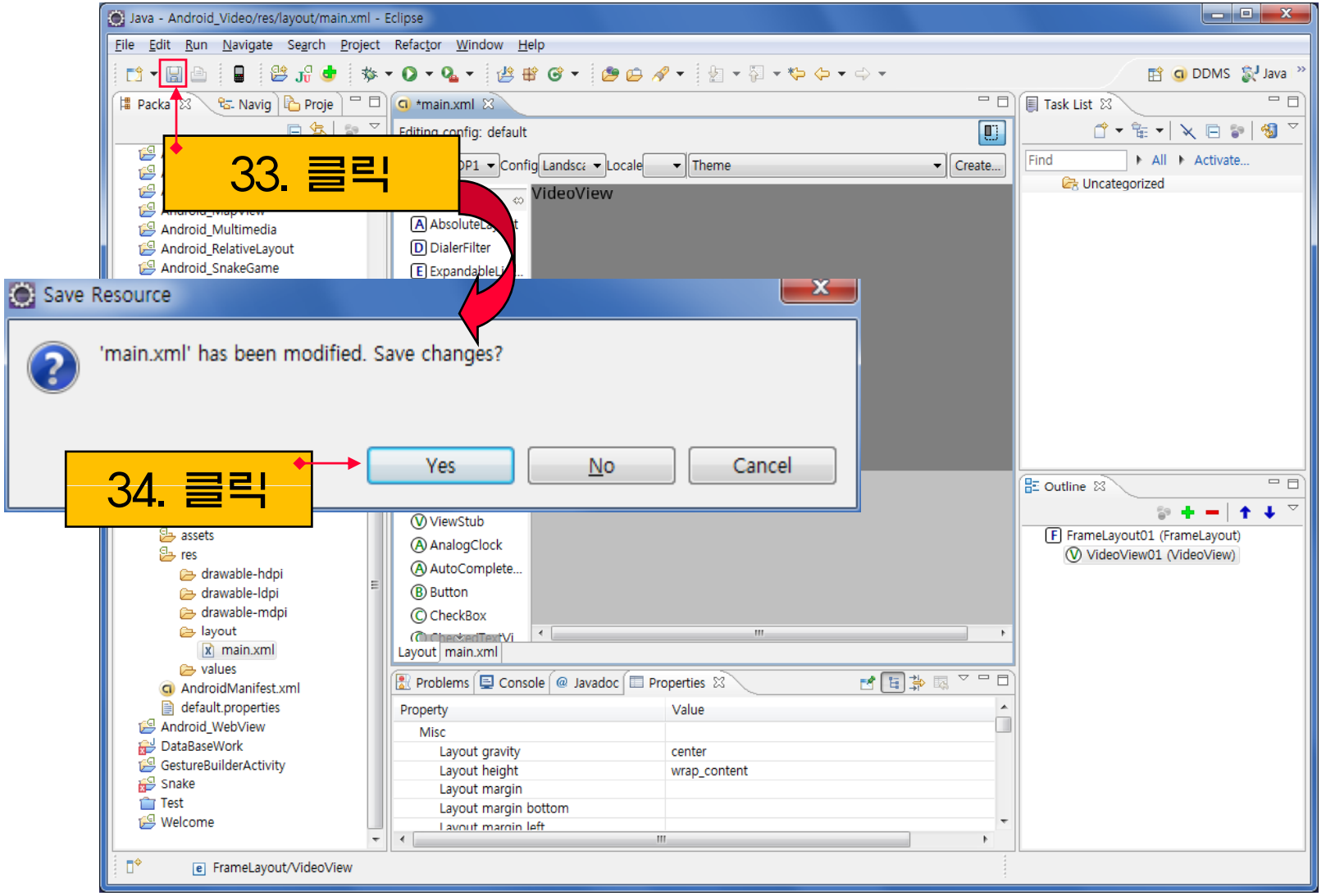
```
1<?xml version="1.0" encoding="utf-8"?>
2<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3    android:orientation="vertical"
4    android:layout_width="fill_parent"
5    android:layout_height="fill_parent"
6    >
7    <TextView
8        android:layout_width="fill_parent"
9        android:layout_height="wrap_content"
10       android:text="@string/hello"
11       />
12   <com.inhatc.android_Image.AndroiView
13       android:id="@+id/AndroiView"
14       android:layout_width="fill_parent"
15       android:layout_height="fill_parent"
16       android:focusable="true">
17   </com.inhatc.android_Image.AndroiView>
18</LinearLayout>
```

32. 추가

Layout | main.xml

Android Custom View 구현 (18)

❖ main.xml 저장



Android Custom View 구현 (19)

❖ R.java

R.java

```
1  /* AUTO-GENERATED FILE.  DO NOT MODIFY.
7
8  package com.inhatc.android_Image;
9
10 public final class R {
11     public static final class attr {
12     }
13     public static final class drawable {
14         public static final int androi=0x7f020000;
15         public static final int icon=0x7f020001;
16     }
17     public static final class id {
18         public static final int AndroiView=0x7f050000;
19     }
20     public static final class layout {
21         public static final int main=0x7f030000;
22     }
23     public static final class string {
24         public static final int app_name=0x7f040001;
25         public static final int hello=0x7f040000;
26     }
27 }
```

35. drawable 클래스 변수 추가 확인

Android Custom View 구현 (20)

AndroidView.java 수정

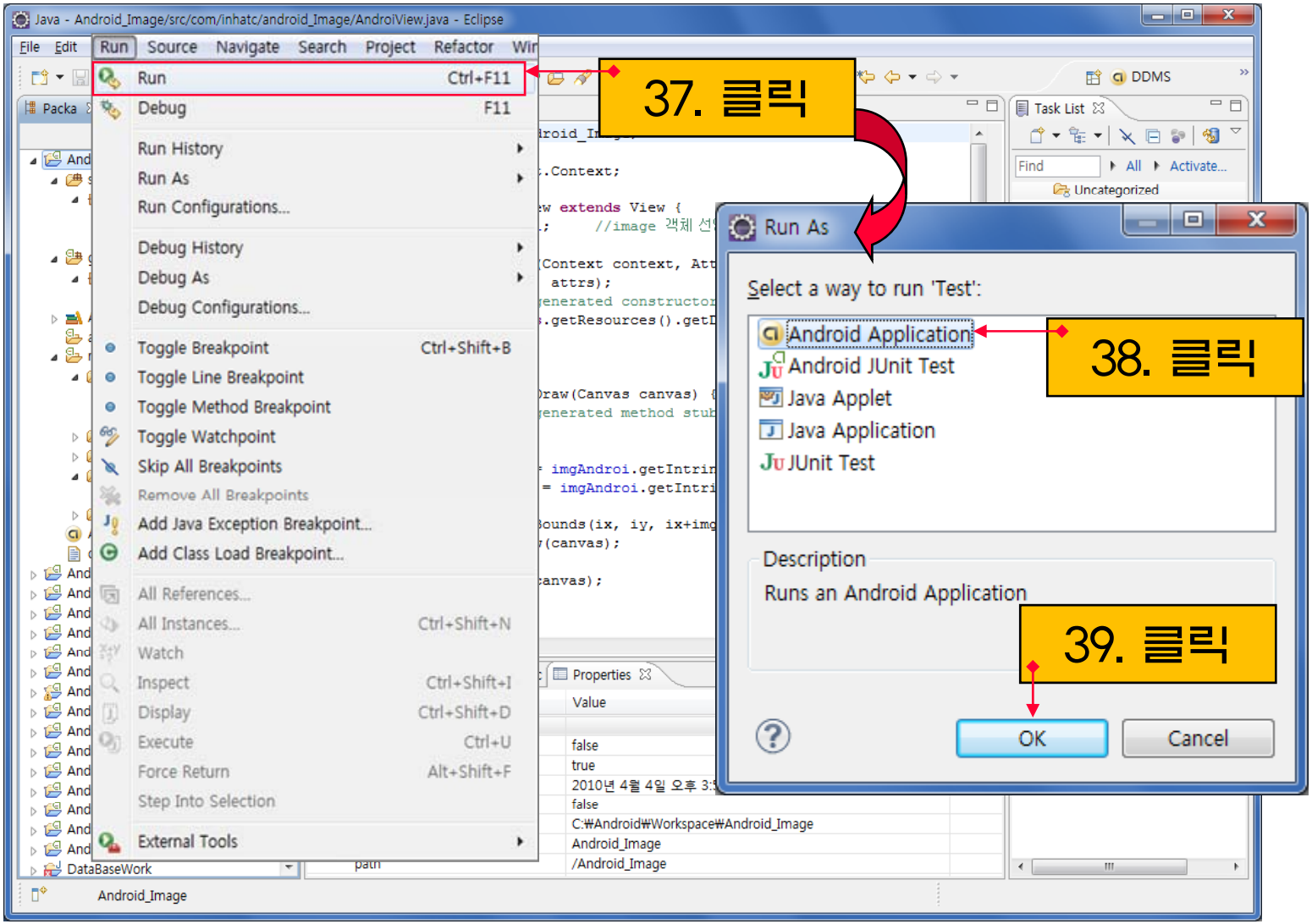
AndroiView.java

```
1  package com.inhatc.android_Image;
2
3  import android.content.Context;
4  import android.graphics.Canvas;
5  import android.graphics.drawable.Drawable;
6  import android.util.AttributeSet;
7  import android.view.View;
8
9  public class AndroiView extends View {
10     Drawable imgAndroi;          //image 객체 선언
11     int ix, iy;                  //Width, Height 저장
12     int imgWidth, imgHeight;     //Image Width, Height 저장
13
14     public AndroiView(Context context, AttributeSet attrs) {
15         super(context, attrs);
16         // TODO Auto-generated constructor stub
17
18         imgAndroi=this.getResources().getDrawable(R.drawable.androi);
19     }
20
21     @Override
22     protected void onDraw(Canvas canvas) {
23         // TODO Auto-generated method stub
24         imgWidth = imgAndroi.getIntrinsicWidth();
25         imgHeight = imgAndroi.getIntrinsicHeight();
26         ix = 0;
27         iy = 0;
28
29         imgAndroi.setBounds(ix, iy, ix+imgWidth, iy+imgHeight);
30         imgAndroi.draw(canvas);
31
32         super.onDraw(canvas);
33     }
34 }
```

36. Coding

Android Custom View 구현 (21)

❖ Android 프로젝트 실행



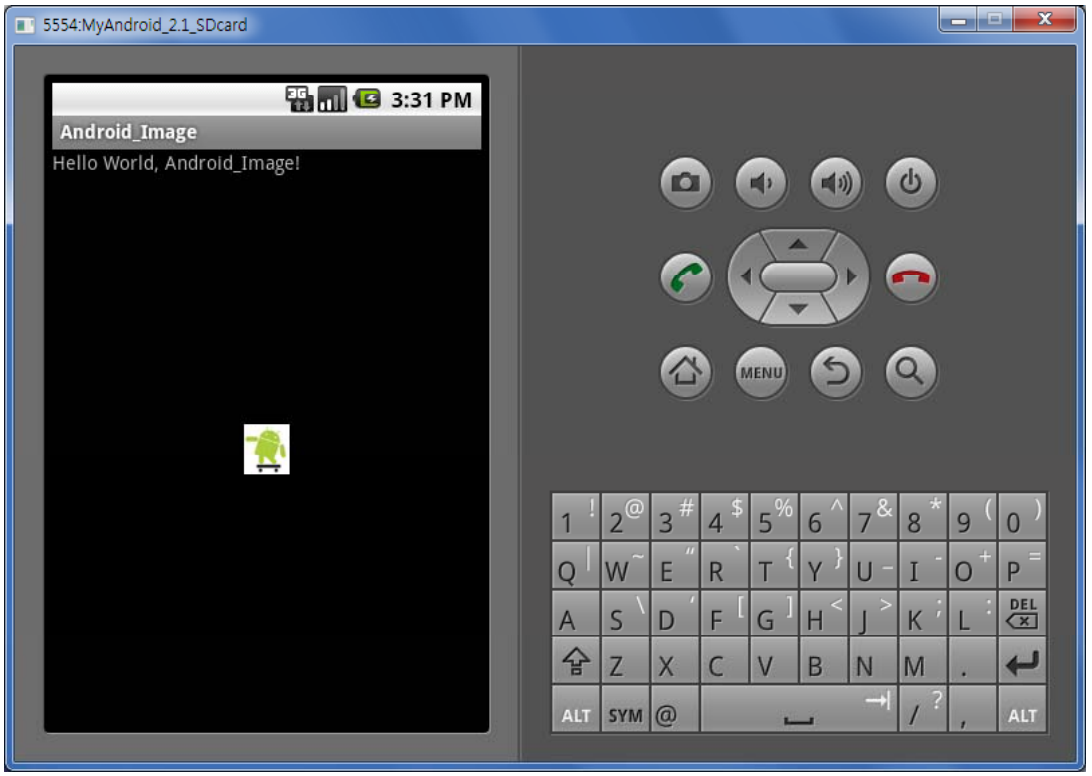
Android Custom View 구현 (22)

❖ 실행 결과

실습 I : Android Image 화면 중앙 출력 구현

Android_Image (실습 시간 : 20분)

- 아래 그림과 같이 Androi( ) 이미지가 화면 중앙에 나타나도록 Coding 하시오.
  - AndroiView.java 의 onDraw(Canvas canvas) 수정



Android Image 화면 중앙 출력 구현

AndroiView.java

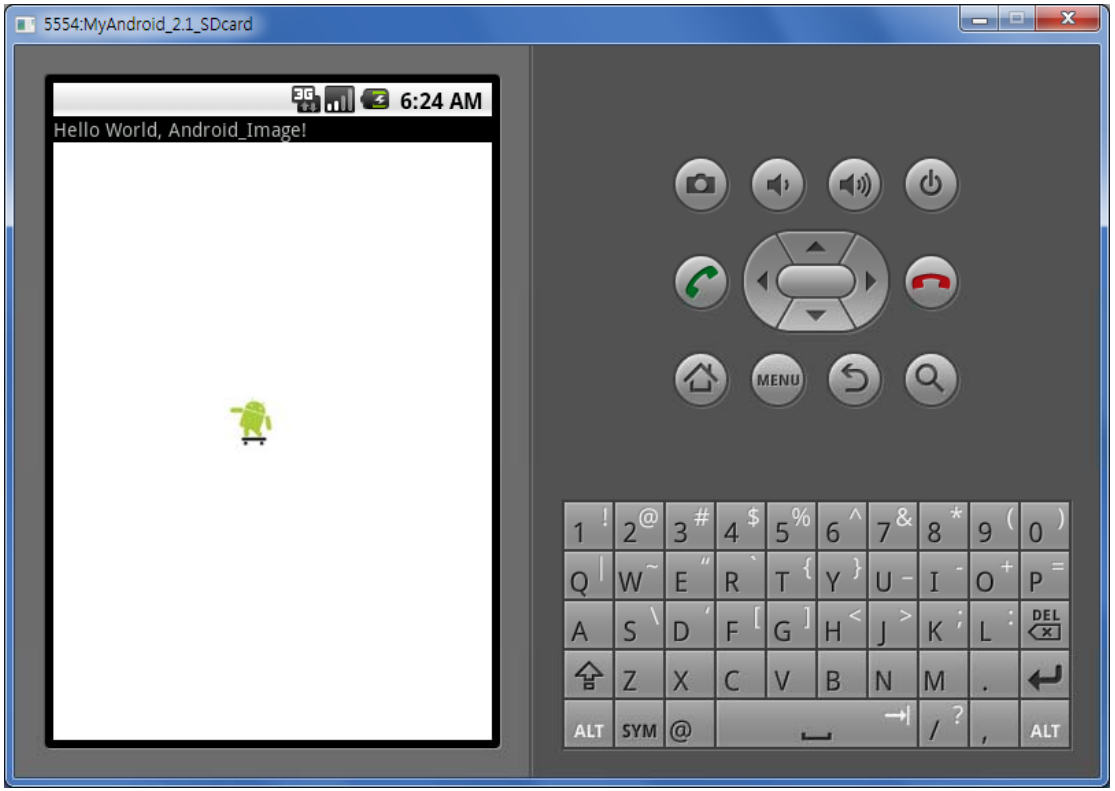
```
1  package com.inhatc.android_Image;
2
3  import android.content.Context;
4  import android.graphics.Canvas;
5  import android.graphics.drawable.Drawable;
6  import android.util.AttributeSet;
7  import android.view.View;
8
9  public class AndroiView extends View {
10     Drawable imgAndroi;          //image 객체 선언
11     int ix, iy;                  //Width, Height 저장
12     int imgWidth, imgHeight;     //Image Width, Height 저장
13
14     public AndroiView(Context context, AttributeSet attrs) {
15         super(context, attrs);
16         // TODO Auto-generated constructor stub
17
18         imgAndroi=this.getResources().getDrawable(R.drawable.androi);
19     }
20
21     @Override
22     protected void onDraw(Canvas canvas) {
23         // TODO Auto-generated method stub
24         imgWidth = imgAndroi.getIntrinsicWidth();
25         imgHeight = imgAndroi.getIntrinsicHeight();
26         ix = (this.getWidth()-imgWidth)/2;
27         iy = (this.getHeight()-imgHeight)/2;
28
29         imgAndroi.setBounds(ix, iy, ix+imgWidth, iy+imgHeight);
30         imgAndroi.draw(canvas);
31
32         super.onDraw(canvas);
33     }
34 }
```

Coding

실습 II : Android KeyEvent 처리 구현

Android_Image (실습 시간 : 20분)

- 아래 그림과 같이 ↑↓←→ Key에 따라 androi( )이미지의 위치를 이동하도록 Coding 하시오.
  - AndroiView.java 의 onKeyDown(int, KeyEvent) method 추가



Android KeyEvent 처리 구현 (1)

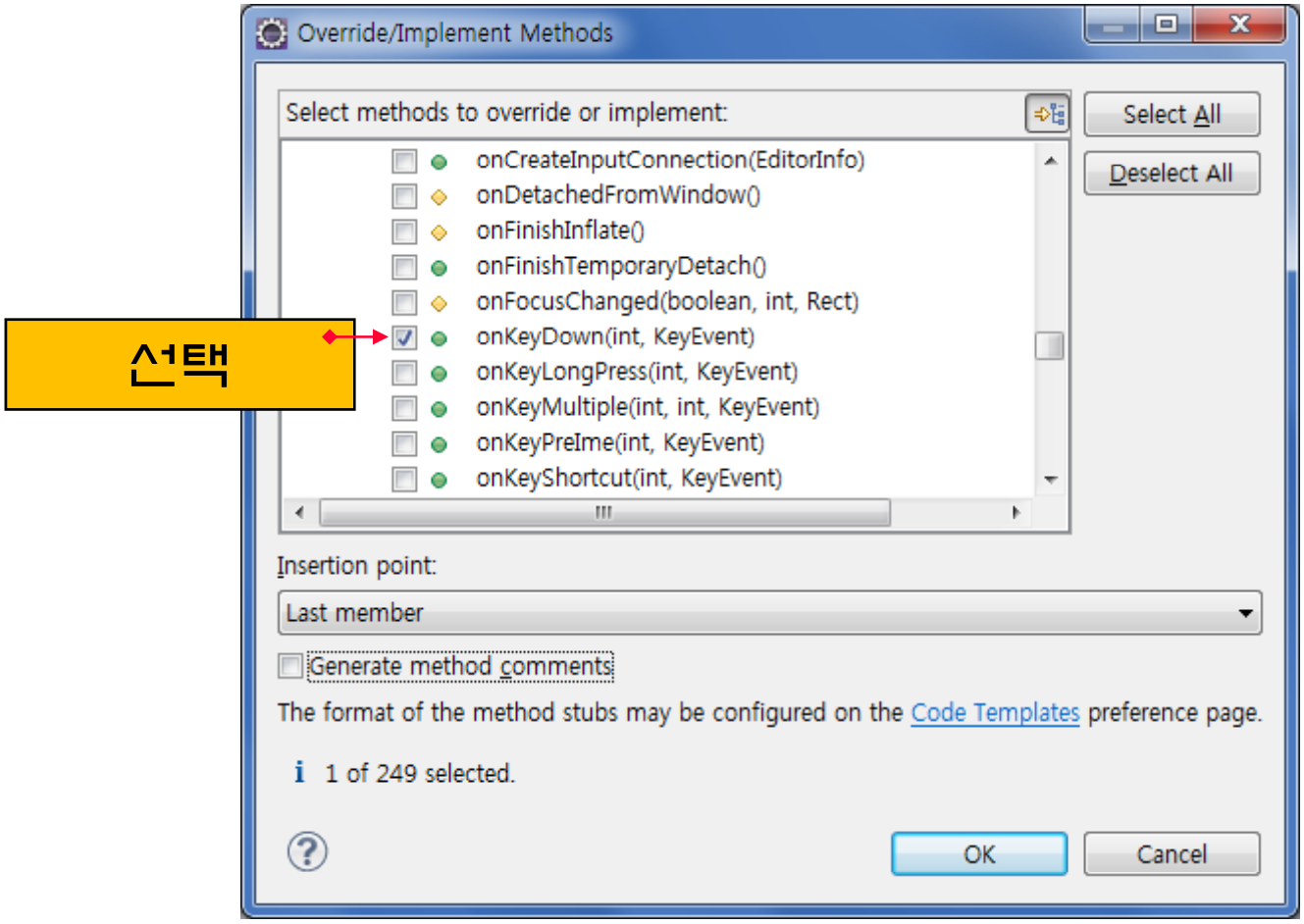
*AndroiView.java

```
1  package com.inhatc.android_Image;
2
3  import android.content.Context;
4  import android.graphics.Canvas;
5  import android.graphics.Color;
6  import android.graphics.drawable.Drawable;
7  import android.util.AttributeSet;
8  import android.view.KeyEvent;
9  import android.view.View;
10
11 public class AndroiView extends View {
12     Drawable imgAndroi;          //image 객체 선언
13     int ix, iy;                  //Width, Height 저장
14     int imgWidth, imgHeight;     //Image Width, Height 저장
15
16     public AndroiView(Context context, AttributeSet attrs) {
17         super(context, attrs);
18         // TODO Auto-generated constructor stub
19         imgAndroi=this.getResources().getDrawable(R.drawable.androi);
20         imgWidth = imgAndroi.getIntrinsicWidth();
21         imgHeight = imgAndroi.getIntrinsicHeight();
22     }
23
24     @Override
25     protected void onDraw(Canvas canvas) {
26
27         canvas.drawColor(Color.parseColor("#FFFFFF")); //Canvas 배경색(white)
28         imgAndroi.setBounds(ix, iy, ix+imgWidth, iy+imgHeight);
29         imgAndroi.draw(canvas);
30
31         super.onDraw(canvas);
32     }
```

Coding

Android KeyEvent 처리 구현 (2)

- onKeyDown(int, KeyEvent) method 추가



Android KeyEvent 처리 구현 (3)

AndroiView.java

```
34    @Override
35    public boolean onKeyDown(int keyCode, KeyEvent event) {
36        // TODO Auto-generated method stub
37        switch(keyCode)
38        {
39            case KeyEvent.KEYCODE_DPAD_LEFT:
40                ix -= 15;
41                break;
42            case KeyEvent.KEYCODE_DPAD_RIGHT:
43                ix += 15;
44                break;
45            case KeyEvent.KEYCODE_DPAD_UP:
46                iy -= 15;
47                break;
48            case KeyEvent.KEYCODE_DPAD_DOWN:
49                iy += 15;
50                break;
51        }
52        this.invalidate();
53        return super.onKeyDown(keyCode, event);
54    }
55    @Override
56    protected void onSizeChanged(int w, int h, int oldw, int oldh) {
57        // TODO Auto-generated method stub
58        ix = (this.getWidth()-imgWidth)/2;
59        iy = (this.getHeight()-imgHeight)/2;
60
61        super.onSizeChanged(w, h, oldw, oldh);
62    }
```

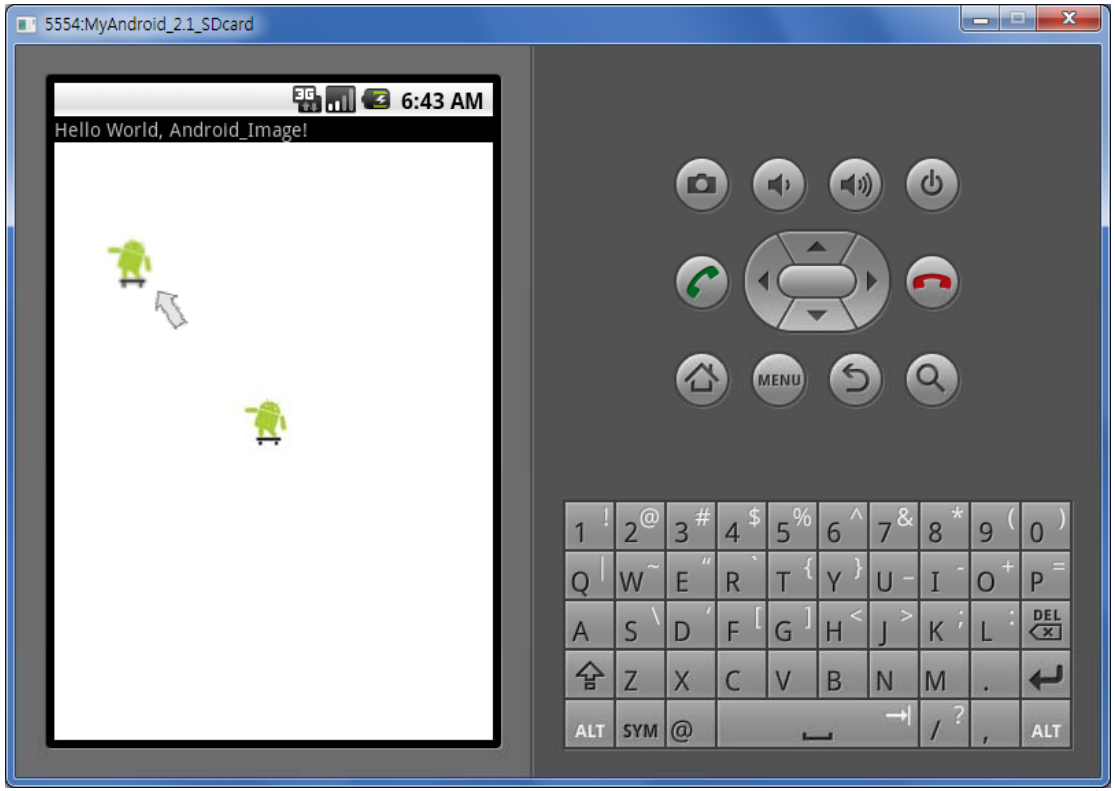
Coding

실습 Ⅲ : Android Screen Touch Event 처리 구현

Android_Image (실습 시간 : 20분)

❖ 아래 그림과 같이 screen을 touch한 위치로 androi( ) 이미지를 이동하도록 Coding 하시오.

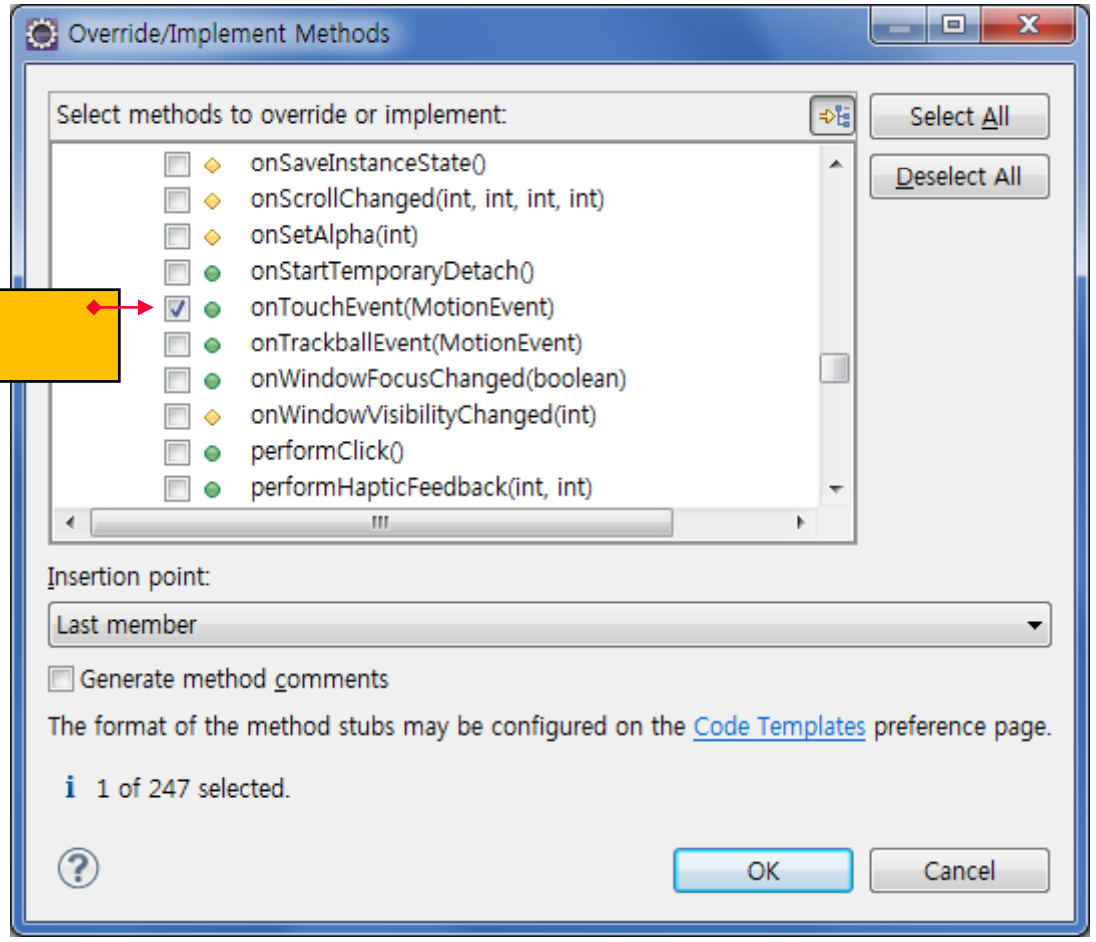
◆ AndroiView.java 의 onTouchEvent(MotionEvent, event) method 추가



Android Screen Touch Event 처리 구현 (1)

- onKeyDown(int, KeyEvent) method 추가

선택



Android Screen Touch Event 처리 구현 (2)

❖ onKeyDown(int, KeyEvent) method 추가

*AndroiView.java

```
62
63      @Override
64      public boolean onTouchEvent(MotionEvent event) {
65          // TODO Auto-generated method stub
66          ix = (int)event.getX();      //Touch 한 Screen 위치의 X 좌표
67          iy = (int)event.getY();      //Touch 한 Screen 위치의 Y 좌표
68          this.invalidate();
69
70          return super.onTouchEvent(event);
71      }
72  }
```

Coding

학습 요약

- CustomView 구현
- Keyboard 입력 처리
- Touch Screen 처리
- 실습 I
  - ❖ Android Image 화면 중앙 출력 구현
- 실습 II
  - ❖ Android KeyEvent 처리 구현
- 실습 III
  - ❖ Android Screen Touch Event 처리 구현