

Week04.
이미지의 출력



개발환경 구축 절차

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<https://goo.gl/vSdwLq>

The screenshot shows a web browser window with a GitHub repository page. The URL in the address bar is <https://github.com/hopypark/LectureNotes/tree/master/AndroidApp>. The repository name is **hopypark / LectureNotes**. The main navigation tabs are **Code**, **Issues 0**, **Pull requests 0**, **Projects 0**, **Wiki**, **Insights**, and **Settings**. The **Code** tab is selected. The file list shows the following files and their details:

File	Description	Last Commit
hopypark Week04.Chap07.이미지의 출력	Latest commit 20be68a a minute ago	
..		
README.md	Create readme.md	a month ago
Week02.Chap02.앱 개발환경 구축.pdf	Add files via upload	a month ago
Week02.Chap03.앱 프로젝트 구조와 실행원리.pdf	Add files via upload	26 days ago
Week03.Chap06.텍스트 출력과 레이아웃.pdf	Week03.Chap06.텍스트 출력과 레이아웃.pdf	12 days ago
Week04.Chap07.이미지의 출력.pdf	Week04.Chap07.이미지의 출력	a minute ago
ic_launcher_new-web.png	Add files via upload	29 days ago
starry_night.png	starry_night.png	4 hours ago

At the bottom of the code area, there is a preview of the **README.md** file, which is currently empty.

이미지 출력 앱의 예



(a) 사진 목록(인스타그램)



(b) 음식 배달 메뉴(배달의민족)

• 이미지 중심 앱의 예

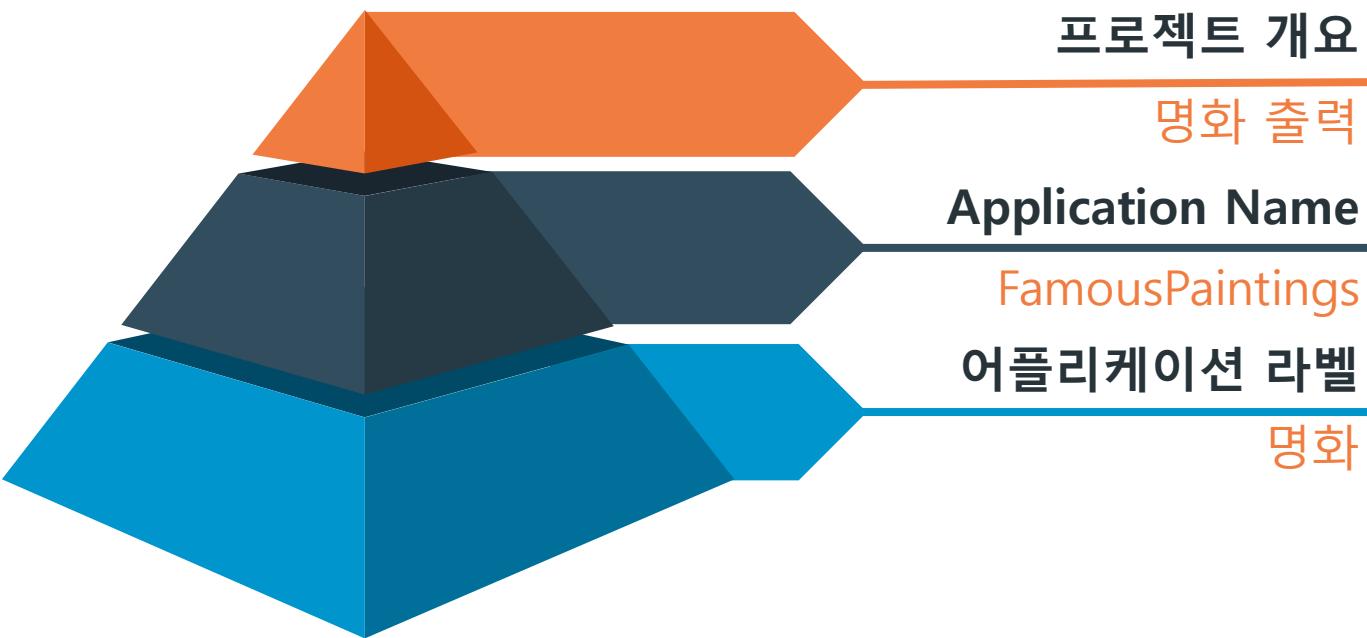
이지미 출력 원리

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Step 0. 프로젝트 개요

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Step 1. 프로젝트 생성

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절차	내용
① 프로젝트 시작	메뉴에서 ‘File → New Project’ 클릭
② 프로젝트 구성	Application Name: FamousPaintings
	Company Domain: 사용자계정.example.com(디폴트 사용)
③ 제품형태	Phone and Tablet(사용할 안드로이드 버전 지정: Android 7.0 Nougat)
④ 액티비티 유형	Empty Activity
⑤ 파일 옵션	Activity Name: MainActivity
	Layout Name: activity_main

Step 2. 파일 편집

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모듈	폴더	소스 파일	편집 내용
manifests		AndroidManifest.xml	
java	com.example.kyungtae.famouspaintings	MainActivity.java	
	drawable	starry_night.png	<ul style="list-style-type: none">명화 이미지
		shape_title.xml	<ul style="list-style-type: none">명화 제목의 출력모양 설계(배경색, 패딩, 모서리)
	layout	activity_main.xml	<ul style="list-style-type: none">명화 화면 구성(제목, 작가, 이미지, 설명)
res	mipmap	ic_launcher.png	
		dimens.xml	
	values	strings.xml	<ul style="list-style-type: none">명화 목록 아이템(제목, 작가, 설명)
		styles.xml	

배경 이미지



starry_night.png (drawable)

아이콘 이미지

모양
shape
shape rectangle
색
color #3061380B
shape_title.xml(drawable)

앱 라벨

시 제목

작가

시 본문

텍스트 자원

string
app_name 명화
title01 Starry Night
autho01 고흐
desc01 빈 센트 반 고흐 ...
strings.xml (values)

화면 테마

style
AppTheme:
Theme.AppCompat.Light.DarkActionBar
item
colorPrimary
@color/colorPrimary
styles.xml (values)

화면 테마 구성 색상

color
colorPrimary #3F51B5
colors.xml (values)

화면 레이아웃

LinearLayout
TextView
text @string/title01
background @drawable/shape_title
TextView
text @string/artist01
ImageView
src @string/starry_night
TextView
text @string/desc01
activity_main.xml (layout)

화면 출력 소스

액티비티 제어

onCreate
super onCreate()
setContentView(R.layout.activity_main)
MainActivity.java (layout)

어플리케이션 구성
액티비티의 자바 클래스

어플리케이션 기본 정보

application
icon @mipmap/ic_launcher
label @string/app_name
theme @style/AppTheme
activity
name MainActivity
AndroidManifest.xml (manifest)

컴파일/빌더

컴파일/빌더 정보

build.gradle(Project)
build.gradle(Module app)
gradle properties
settings.gradle
local.properties

(Gradle Scripts)

Step 2.1 이미지 파일 복사

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- res 폴더에 있는 **starry_night.png** 파일을 **drawable** 폴더에 저장

모듈	폴더	소스 파일	이미지
res	drawable	starry_night.png	 A reproduction of Vincent van Gogh's painting "Starry Night". It depicts a dark, cypress-lined path leading towards a bright crescent moon and a starry sky over a small town.

ConstraintLayout을 LinearLayout로 바꾸기

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The screenshot shows the Android Studio interface with two tabs at the top: 'activity_main.xml' and 'MainActivity.java'. On the right, there's a preview window titled 'FamousPainting' showing a blue header bar with the text 'FamousPainting'.

Top half (ConstraintLayout):

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.kyungtae.famouspainting.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
```

Bottom half (LinearLayout):

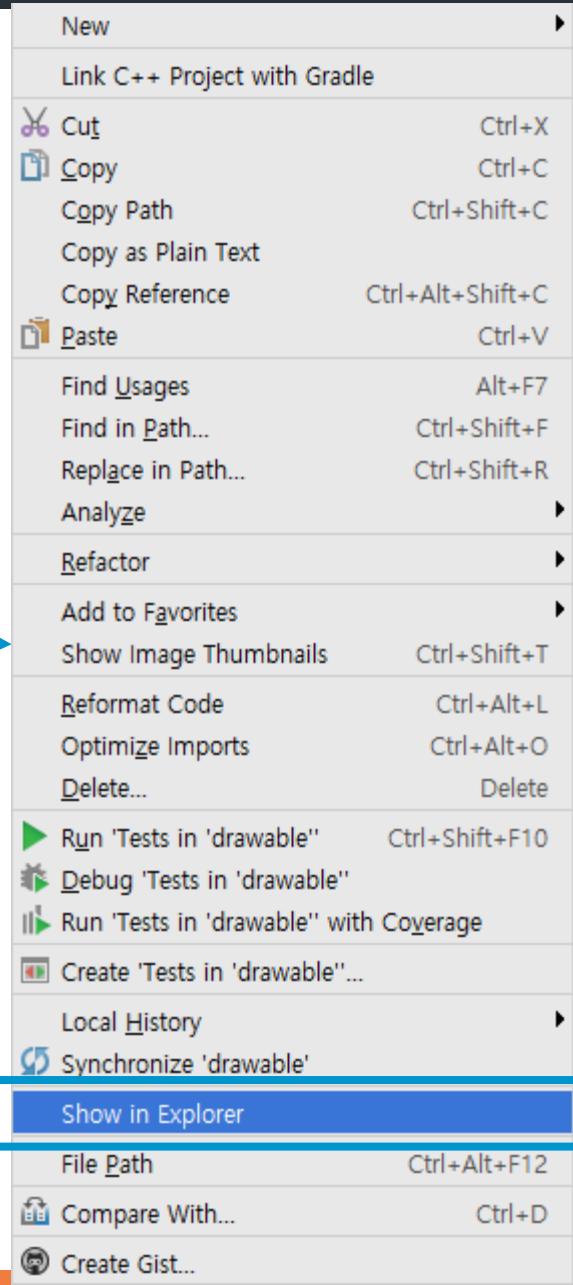
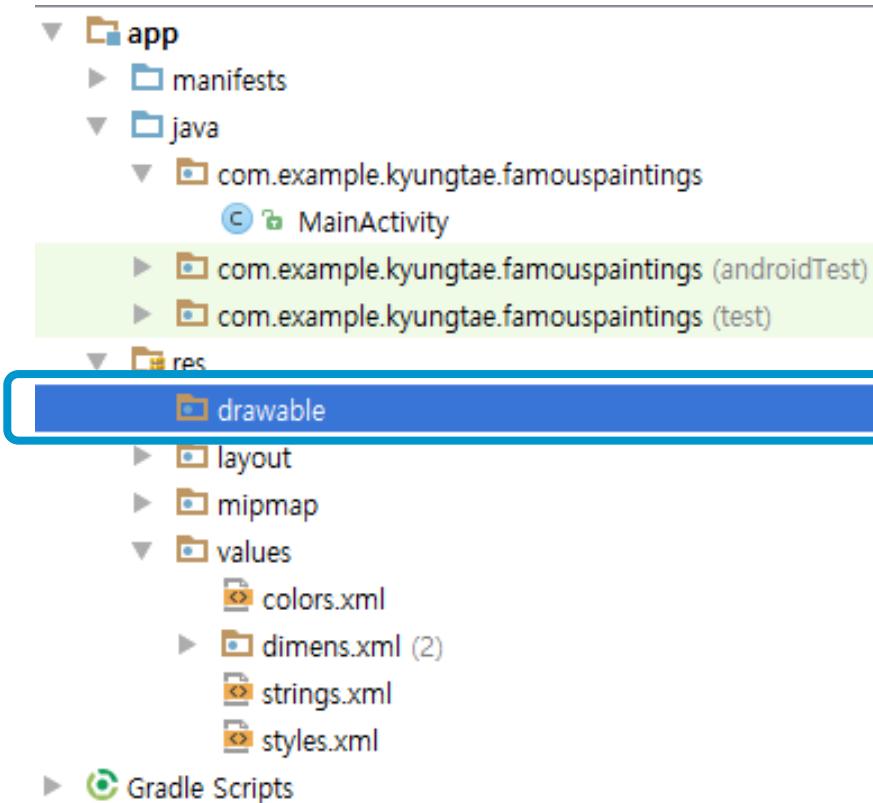
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.kyungtae.famouspainting.MainActivity">

</LinearLayout>
```

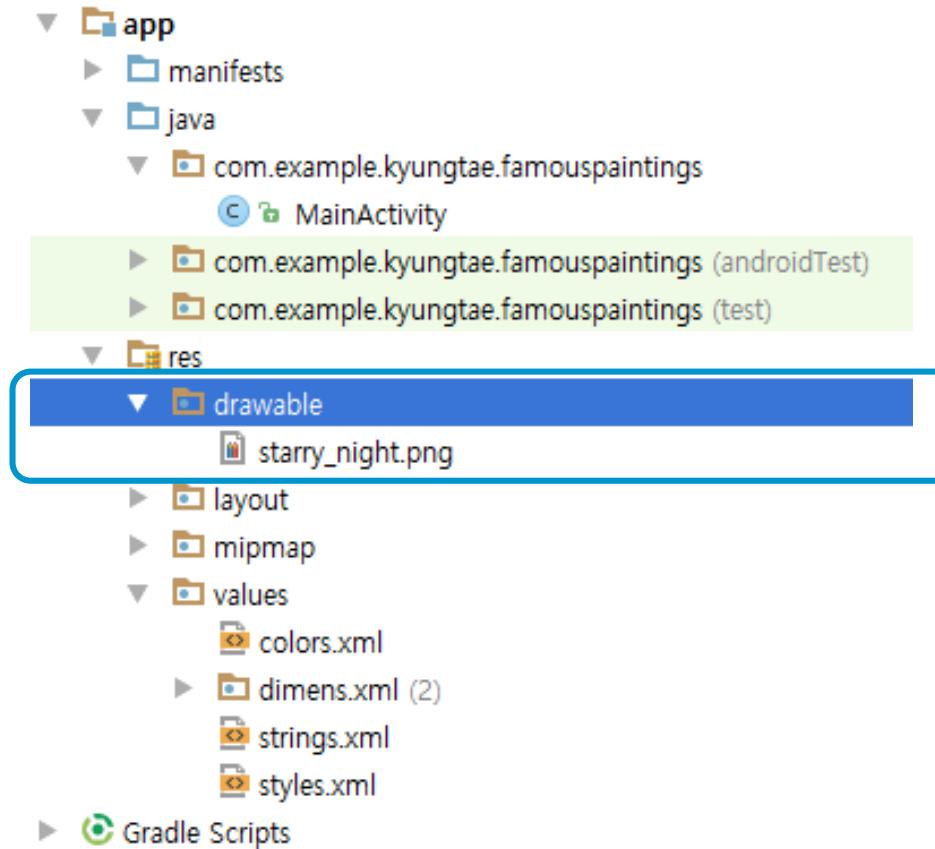
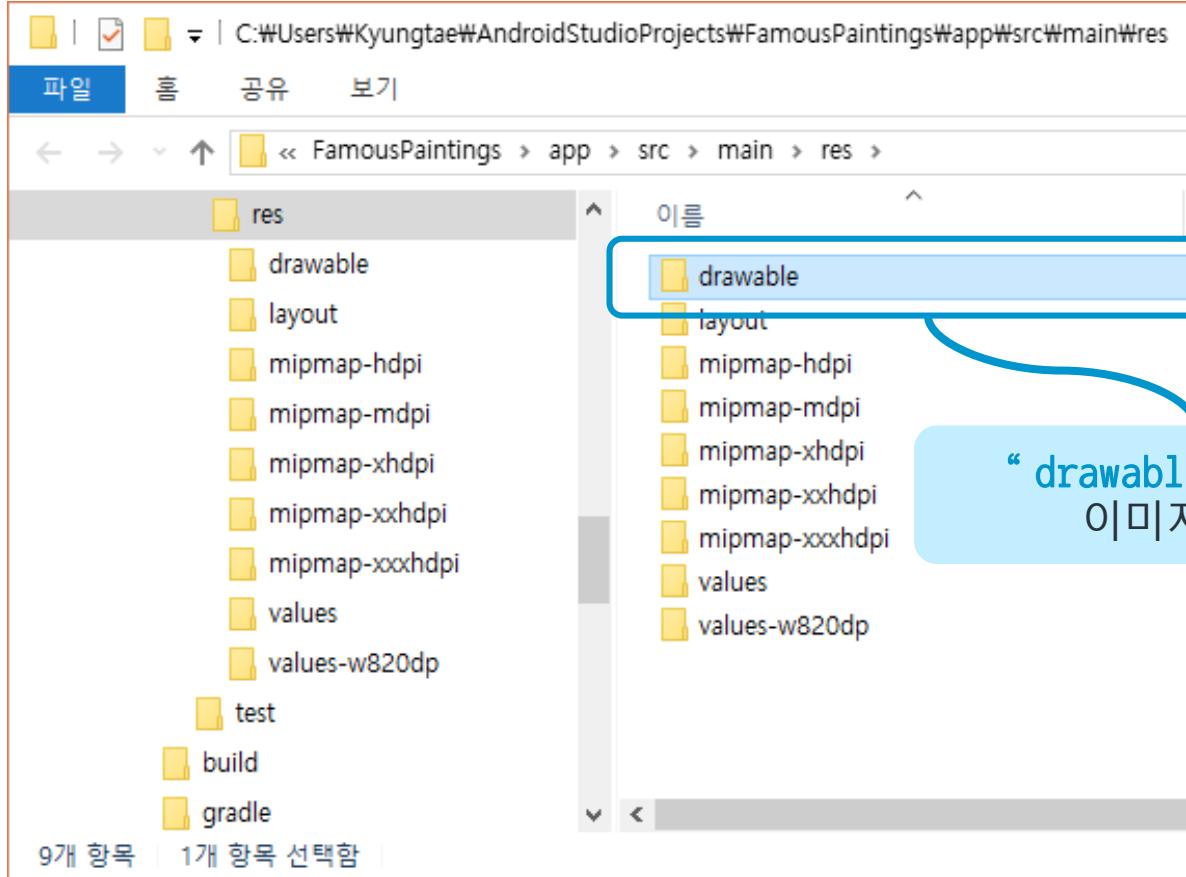
An orange arrow points from the bottom XML code up towards the top XML code, indicating the transformation process.

drawable 폴더에
이미지 추가하기

drawable 폴더에 이미지 추가하기



윈도우 탐색기 창보기
(탐색기에서 이미지 추가)



Step 2.2 텍스트 자원의 편집

- strings.xml

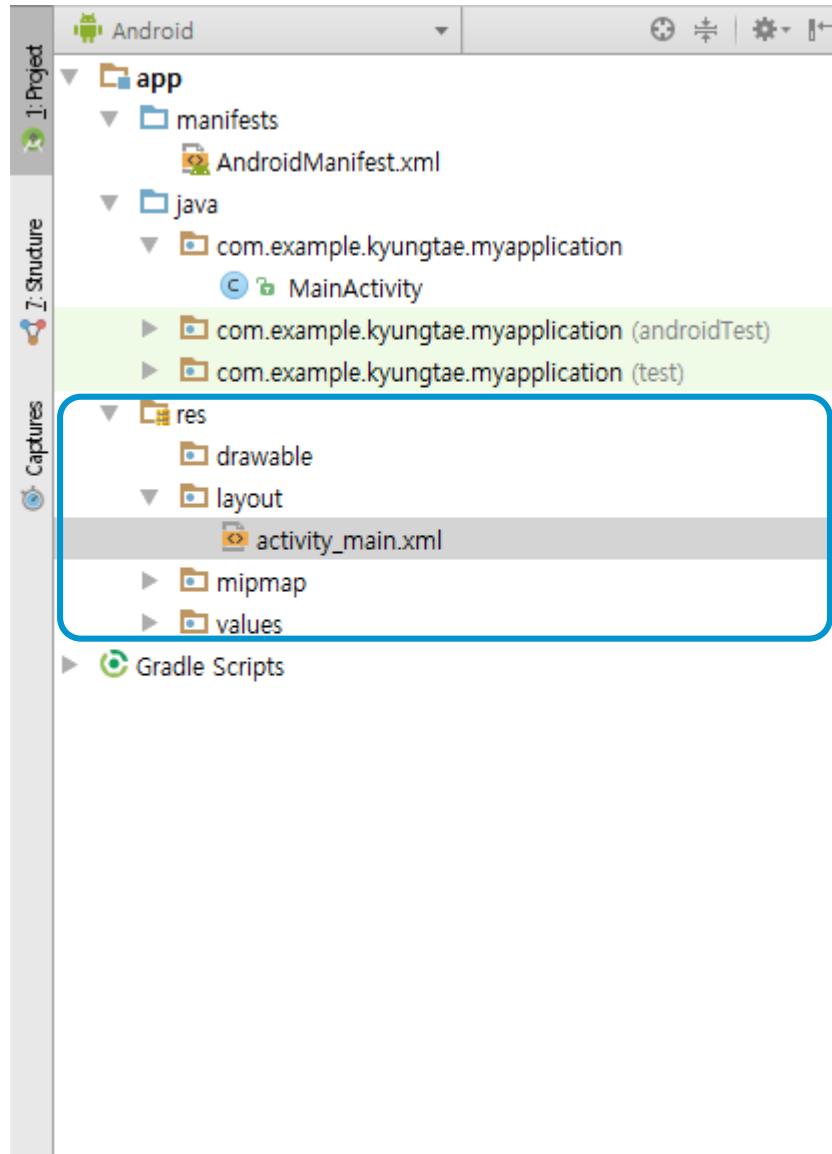
Edit translations for all locales in the translations editor.

```
1 <resources>
2     <string name="app_name">명화</string>
3     <string name="title01">Starry Night</string>
4     <string name="artist01">고흐</string>
5     <string name="desc01">
6         빈센트 반 고흐의 대표작 중 하나로,
7         그가 고갱과 다툰 뒤 자신의 귀를 자른 사건 이후 생레미의 요양원에 있을 때 그린 것이다.\n
8         고흐에게 밤하늘은 무한함을 표현하는 대상이었다.
9         비연속적이고 동적인 터치로 그려진 하늘은 굽이치는 두꺼운 붓놀림으로 사이프러스와 연결되고,
10        그 아래의 마을은 대조적으로 고요하고 평온한 상태를 보여준다.\n
11        그는 병실 밖으로 내다보이는 밤 풍경을 상상과 결합시켜 그렸는데,
12        이는 자연에 대한 반 고흐의 내적이고 주관적인 표현을 구현하고 있다.
13    </string>
14 </resources>
```

"\n"은 줄 넘기문자

Drawable Resource

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모듈에 사용되는 리소스 파일 관리
(화면 레이아웃 설계, 텍스트와 이미지 리소스 등)

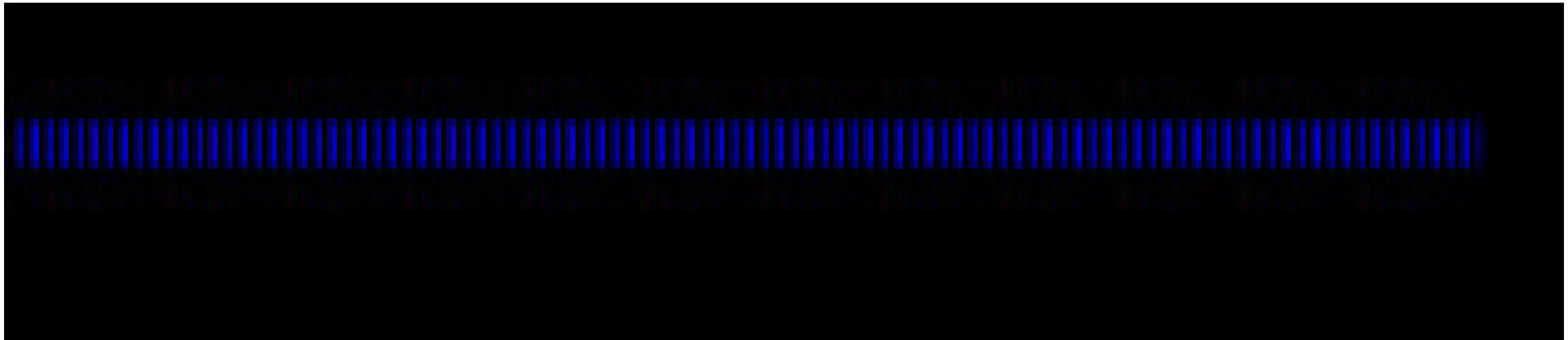
Drawable Resource

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- 화면에 출력하는 그래픽을 위한 일반적인 개념으로 여러 유형이 존재한다.
- Shape Drawable은 색상, 테두리, 그라데이션을 넣거나 가장자리를 둥글게 처리하는 등의 수준 높은 버튼이나 배경을 그릴 수 있다.
- Shape Drawable은 다른 drawable과 마찬가지로 res/drawable/ 내에 XML 파일(res/drawable/filename.xml)을 생성하면 된다.
- Java 소스에서는 R.drawable.filename 형태로, 액티비티 XML에서는 @drawable/filename 형태로 사용

- 예제-선 그리기(출처: <http://aroundck.tistory.com/140>)

```
<shape xmlns:android="http://schemas.android.com/apk/res/android"  
    android:shape="line">  
    <stroke  
        android:width="5dp"  
        android:color="#FF0000FF"  
        android:dashWidth="1dp"  
        android:dashGap="2dp" />  
</shape>
```

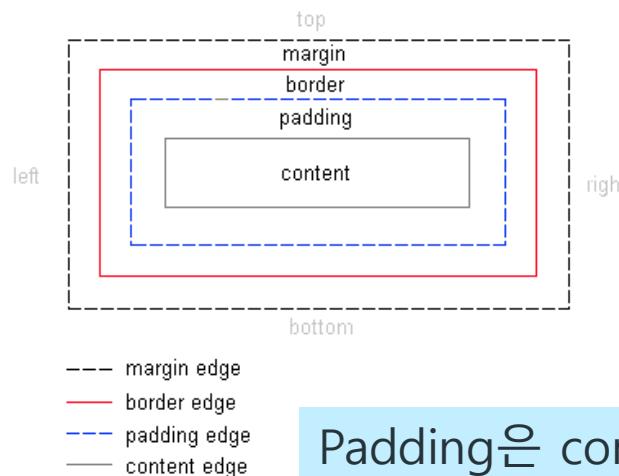


- 예제-사각형 그리기(출처: <http://aroundck.tistory.com/140>)

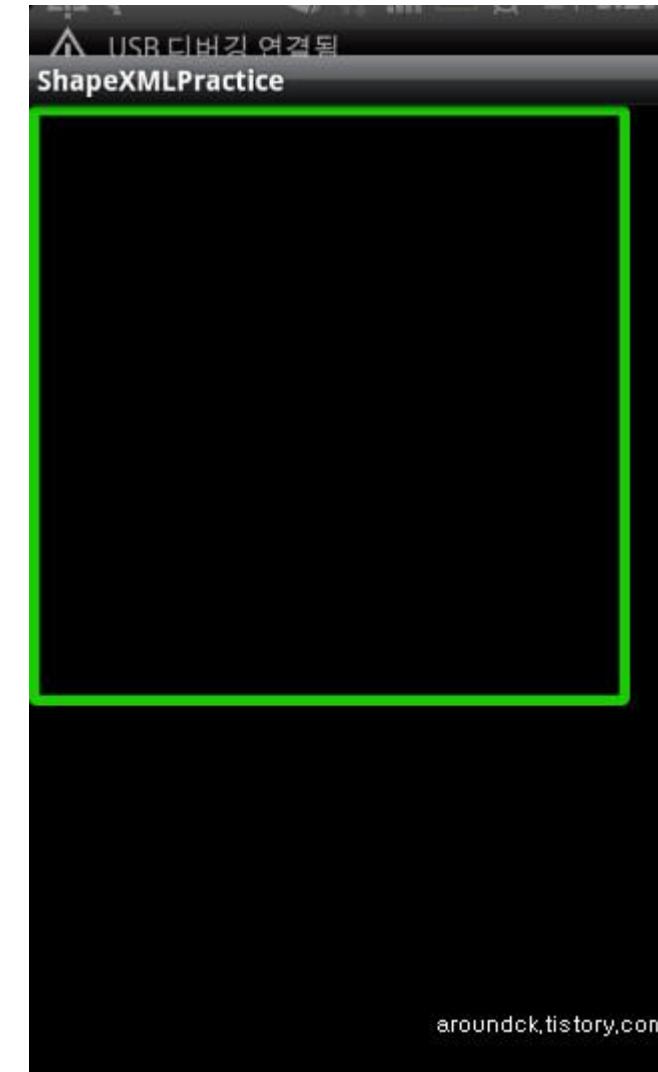
```

<?xml version="1.0" encoding="UTF-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle">
    <stroke
        android:width="5dip"
        android:color="#19CD00" />
    <corners
        android:bottomRightRadius="1dip"
        android:bottomLeftRadius="1dip"
        android:topLeftRadius="1dip"
        android:topRightRadius="1dip"/>
    <padding>
        android:left="1dip"
        android:top="1dip"
        android:right="1dip"
        android:bottom="1dip" />
</shape>

```



Padding은 content와 border 사이의 공간



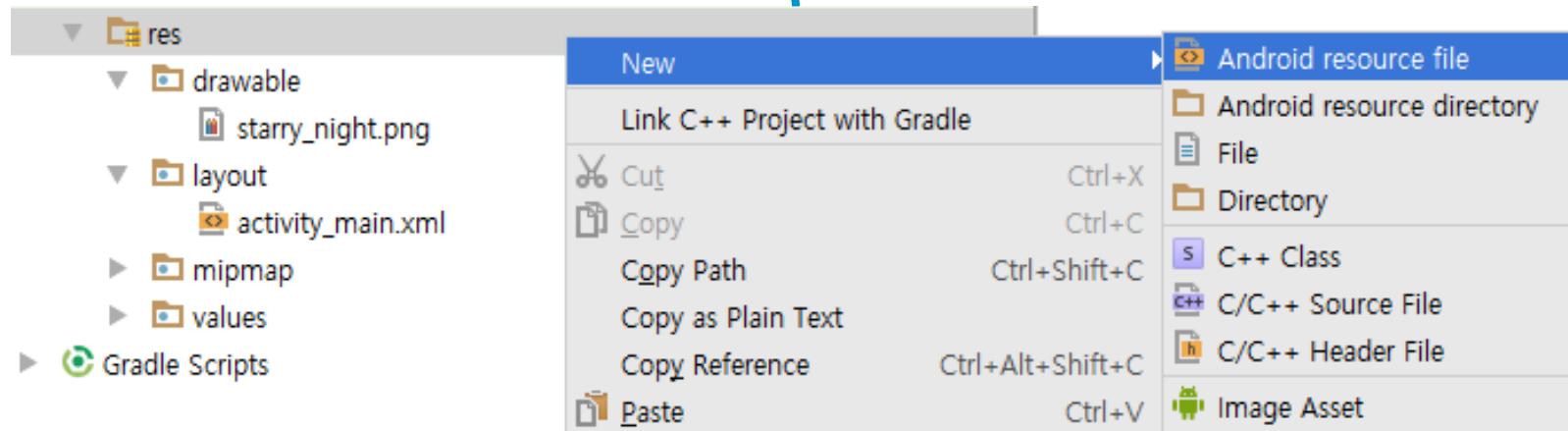
aroundck.tistory.com

• shape_title.xml 생성(res/drawable 폴더)

- drawable resource를 이용한 그림 출력
- 제목(title)에 대한 출력 모양을 지정
- **drawable 폴더에는 화면에 그릴 수 있는 요소(도형)를 XML로 정의**
- android:shape 속성을 사용하여 다른 XML 리소스에 적용할 수 있는 그래픽에 대한 일반적인 개념

Starry Night

XML 파일 생성



- Set New Resource File

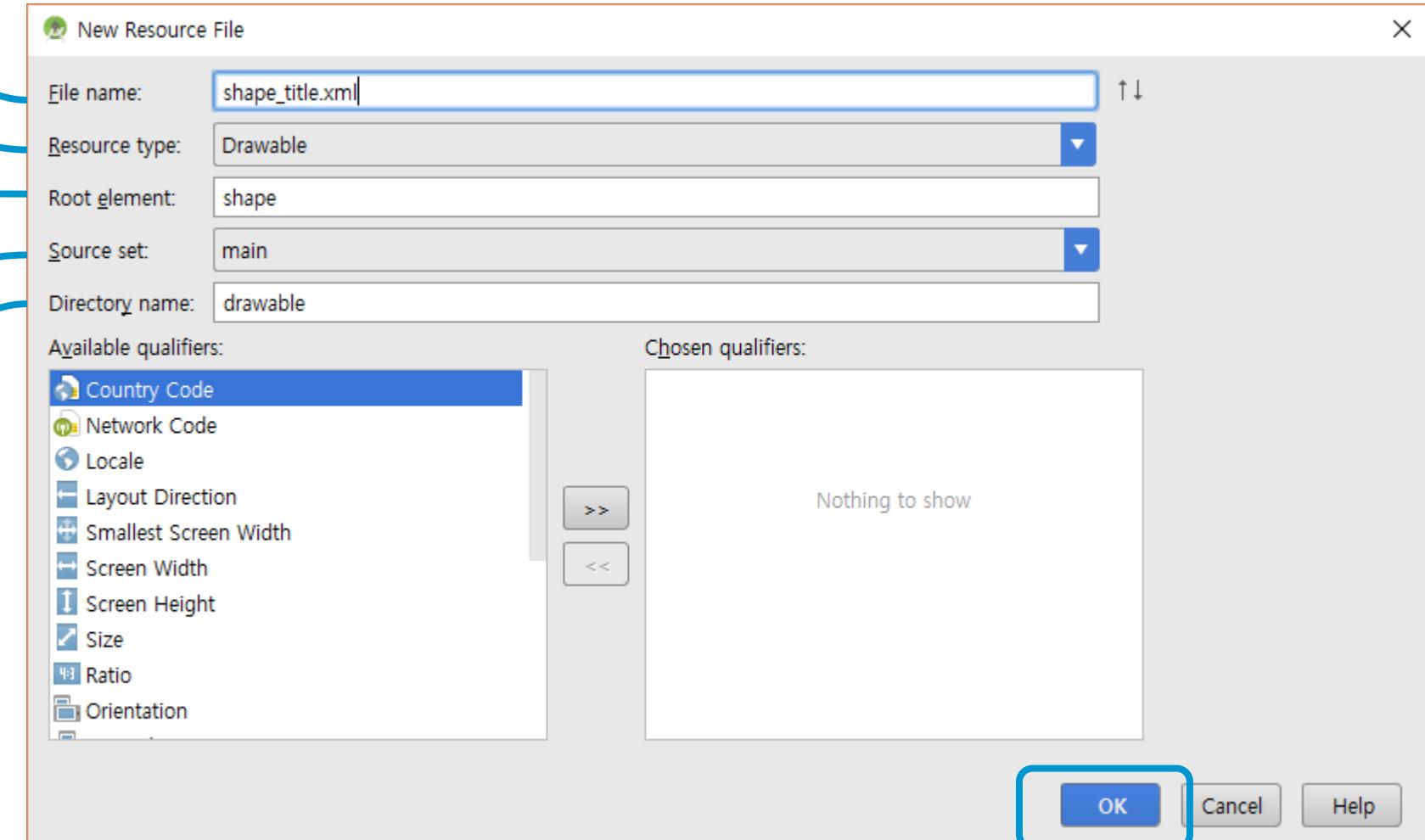
File name: shape_title.xml

Resource type: Drawable

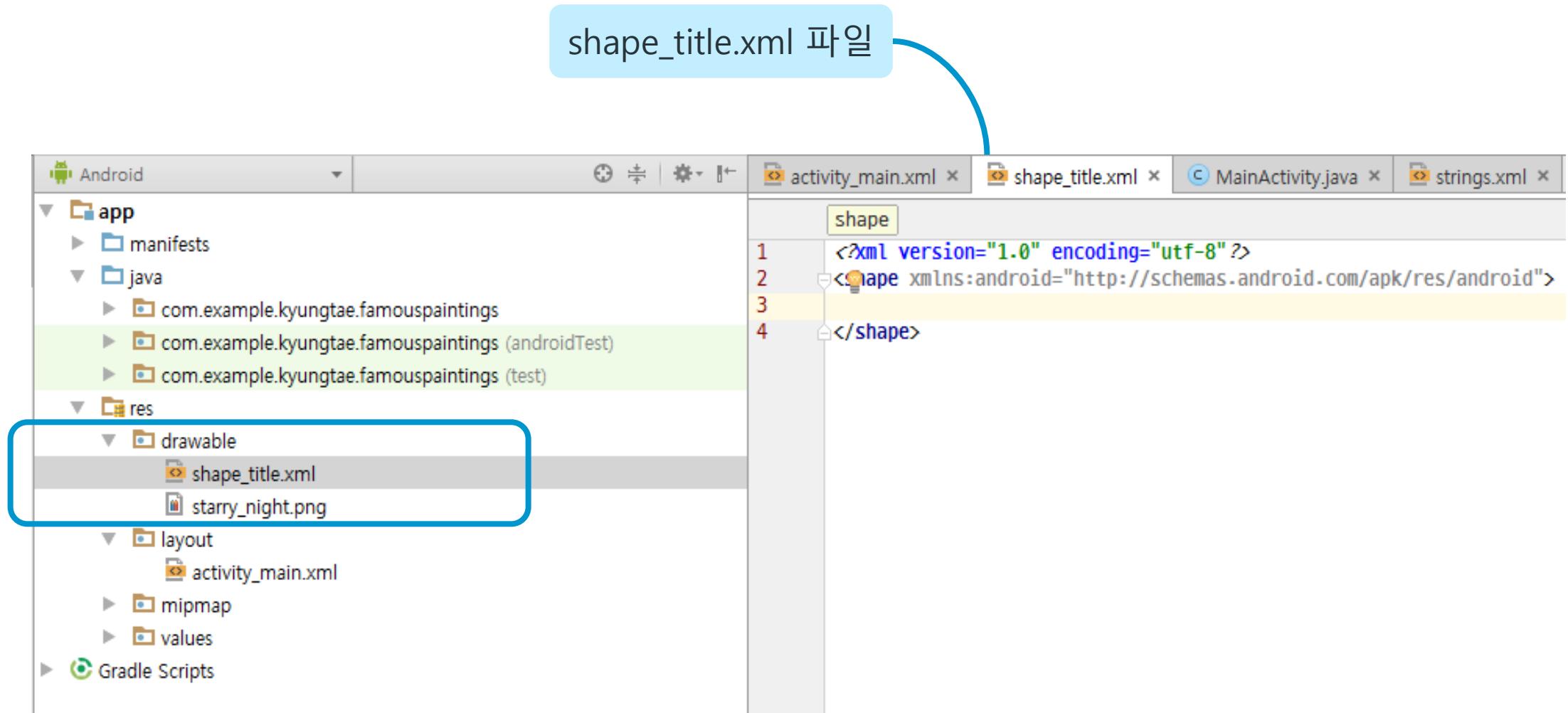
Root element: shape

Source set: main

Directory name: drawable



- 생성된 shape_title.xml



• shape_title.xml 소스

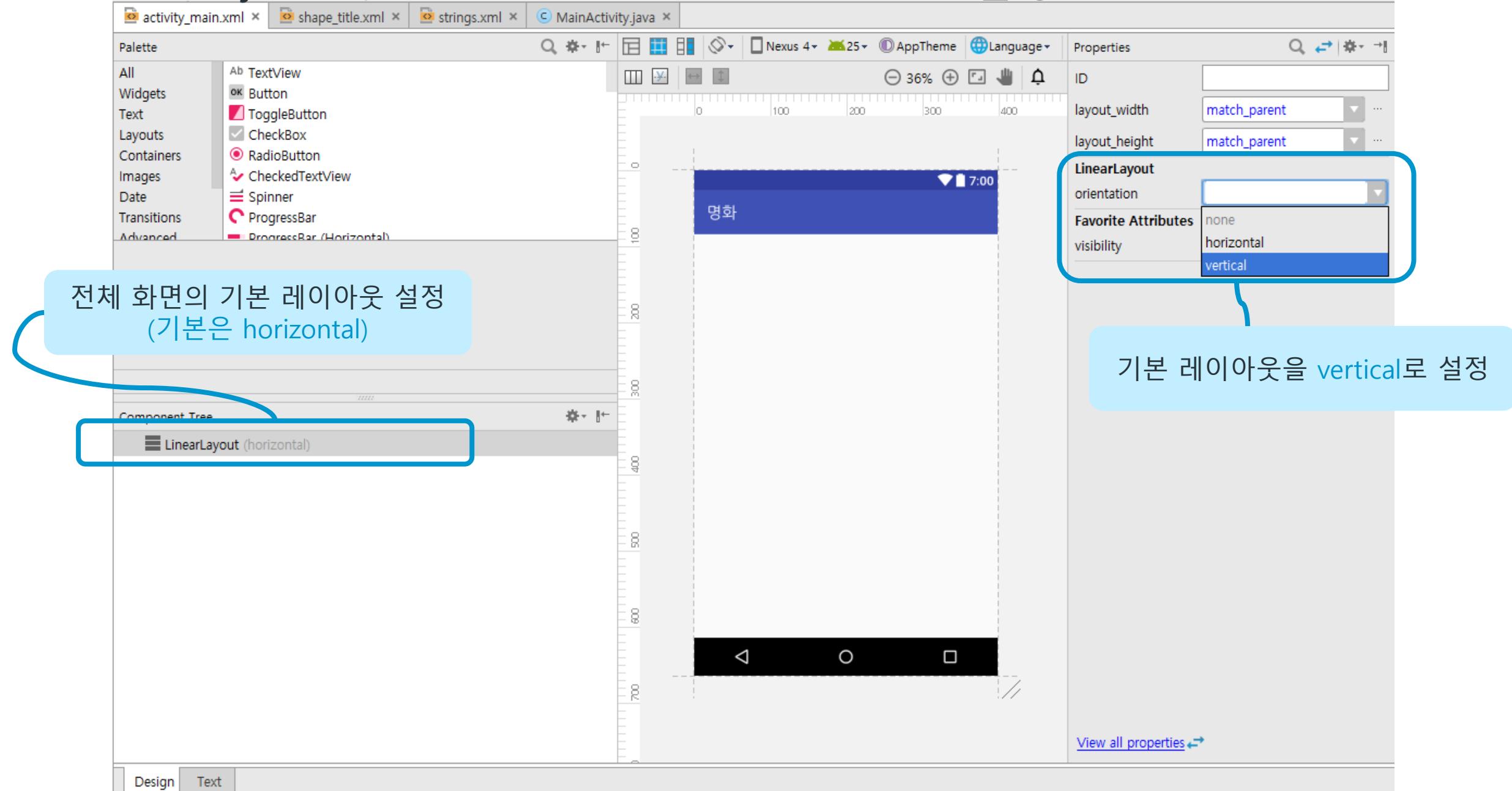
The screenshot shows the Android Studio interface with the `shape_title.xml` file open in the editor. The code defines a rectangle shape with a solid color, padding, and rounded corners. A preview window on the right shows the resulting light blue rounded rectangle.

```
<?xml version="1.0" encoding="utf-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle">
    <solid android:color="#3061380B"/>
    <padding
        android:top="2dp"
        android:bottom="2dp"
        android:left="10dp"
        android:right="10dp">
    </padding>
    <corners android:radius="5dp">
    </corners>
</shape>
```

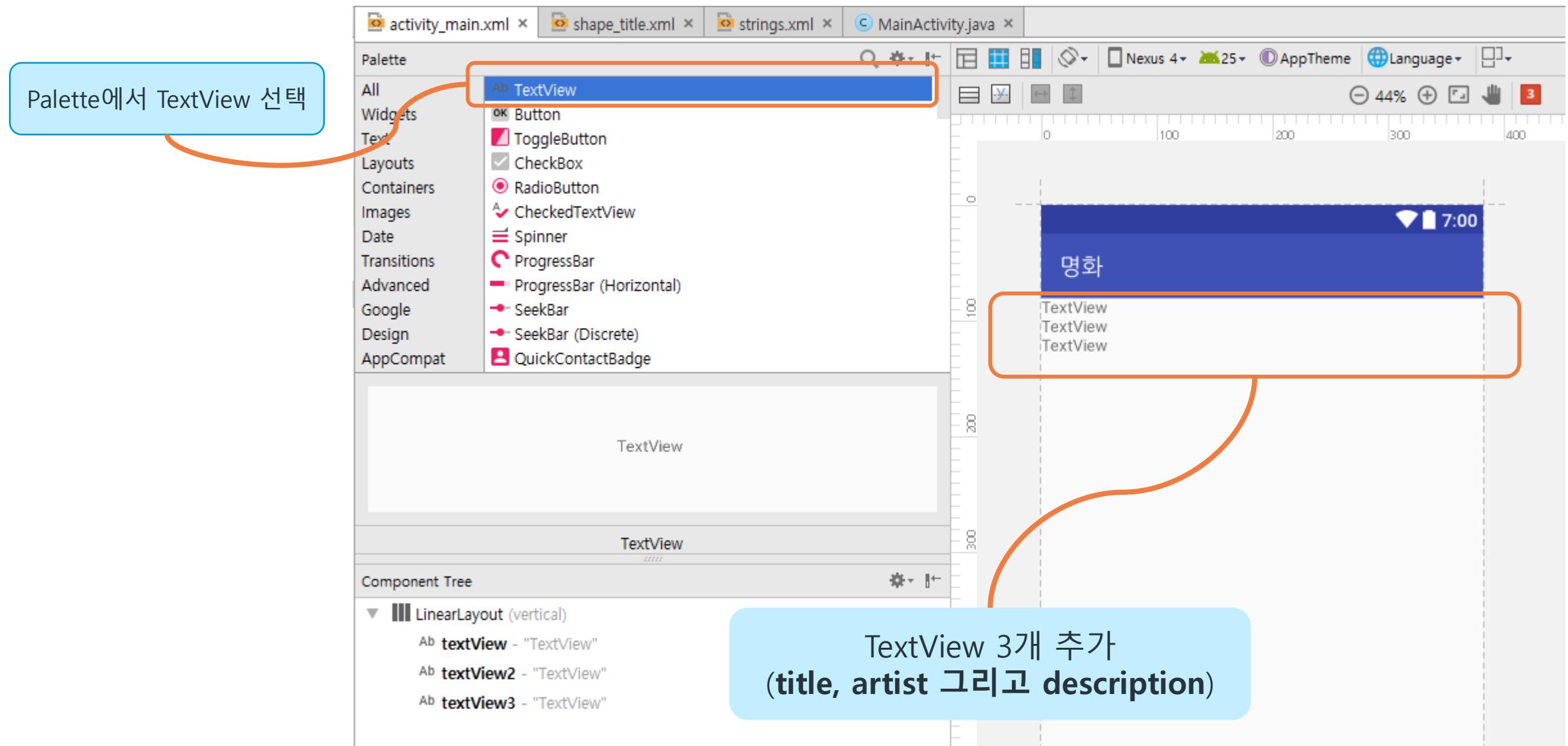
Annotations explain the code:

- Output shape type is set to rectangle (Line 3)
- Output shape color is set to #3061380B (Line 5)
- Padding information is defined (Lines 7-11)
- Corner radius is set to 5dp (Lines 13-14)

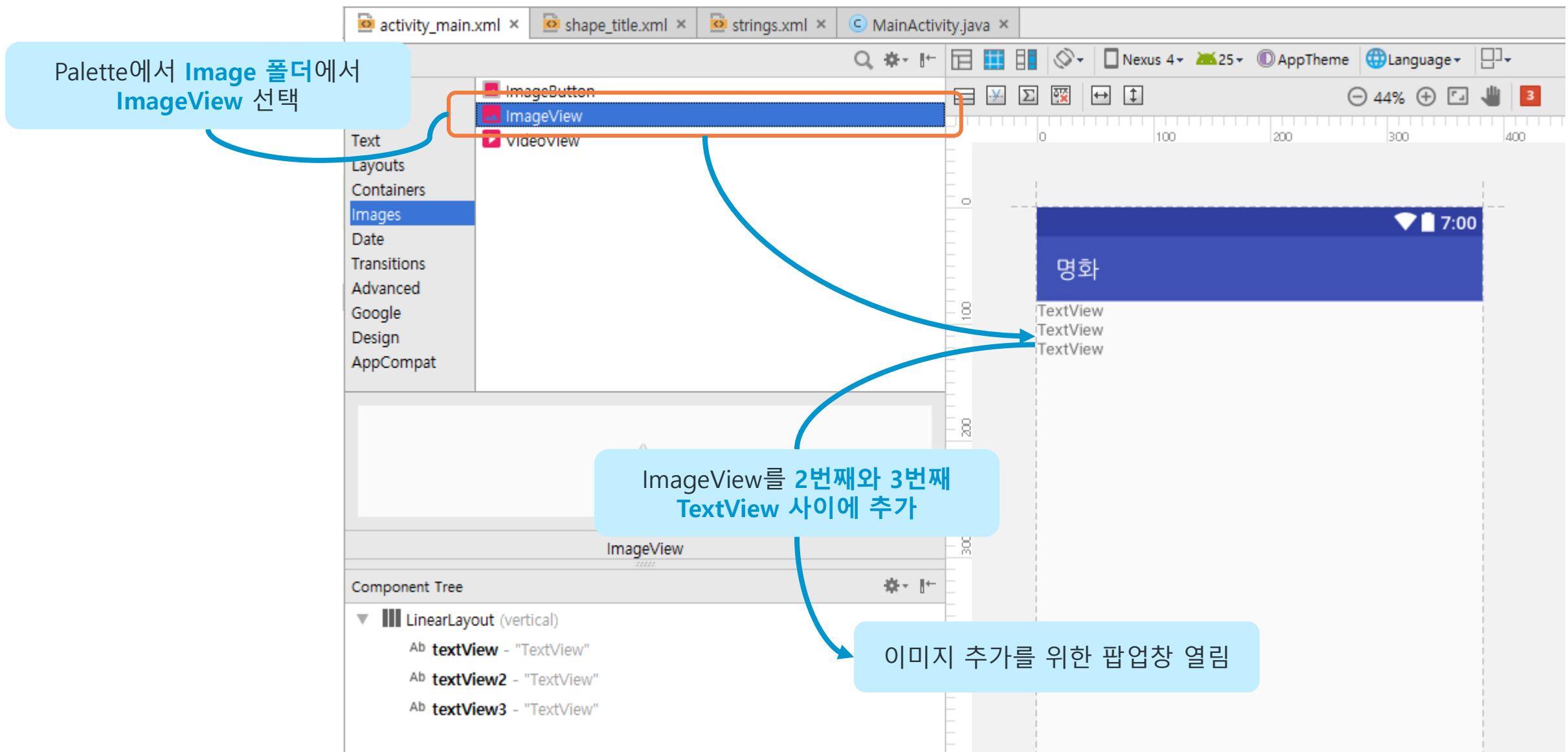
- LinearLayout의 orientation을 vertical로 설정



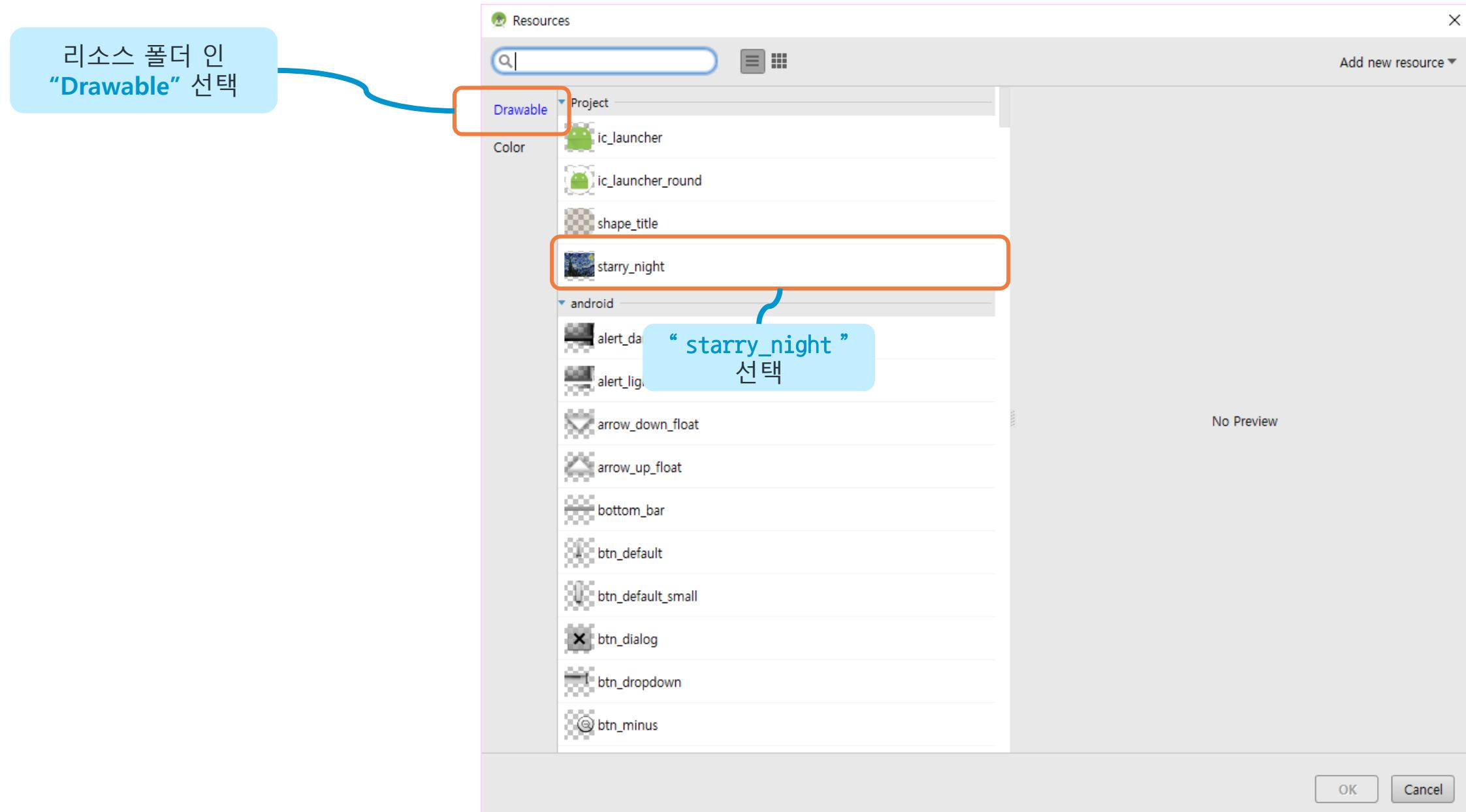
- LinearLayout에 TextView와 ImageView 추가하기



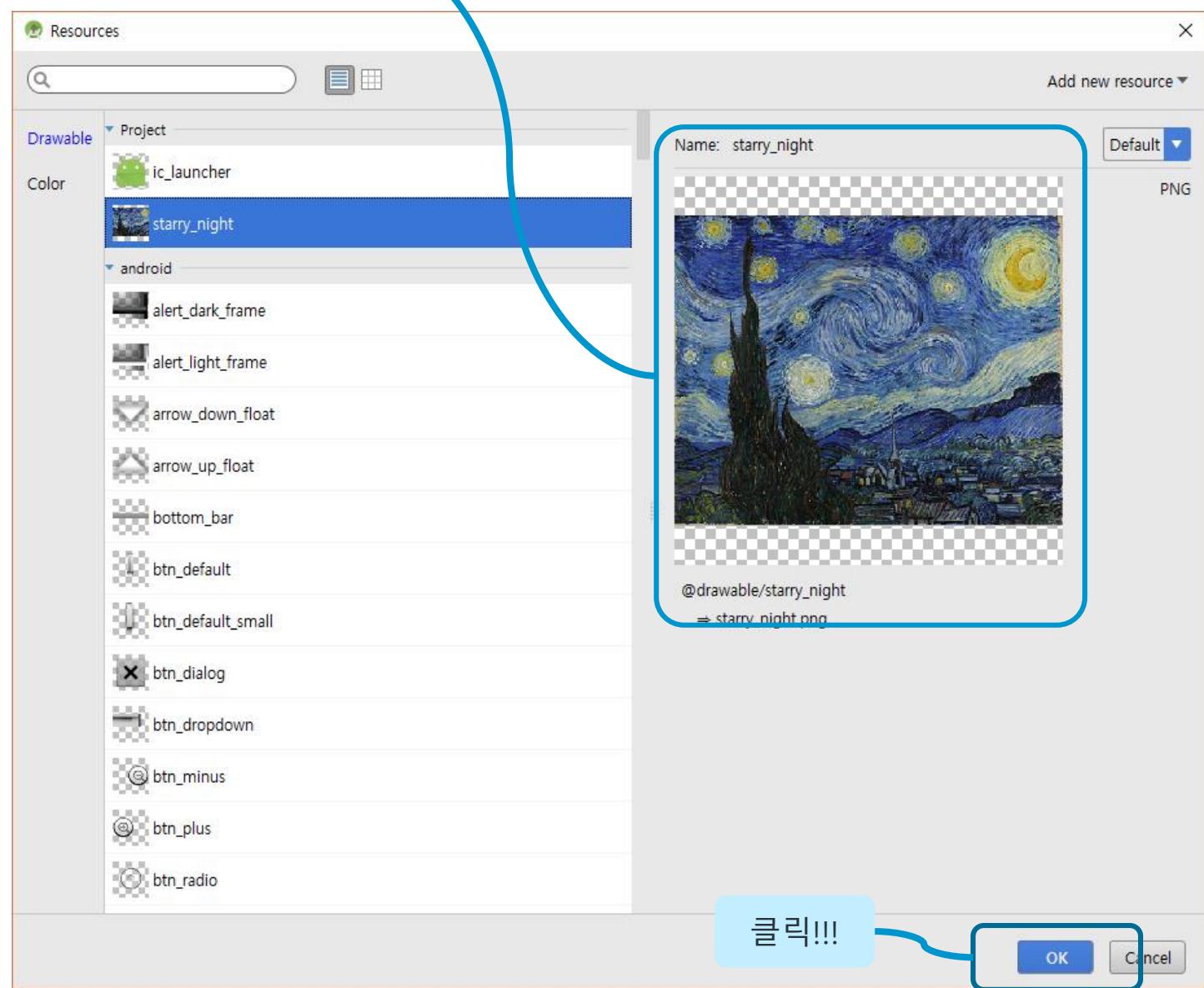
• LinearLayout에 TextView와 ImageView 추가하기



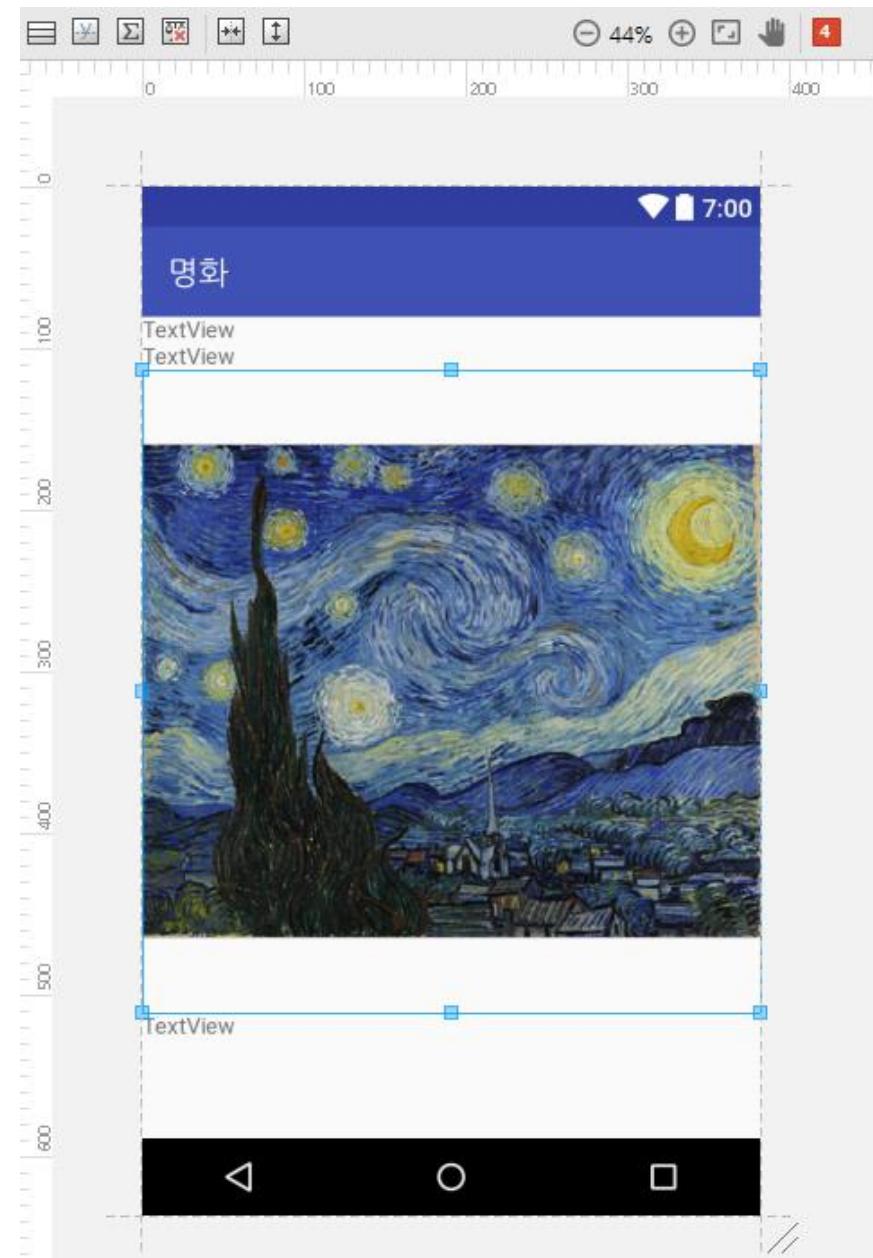
• ImageView에 이미지 소스 선택 팝업 창



선택한 이미지 미리보기



완성된 화면

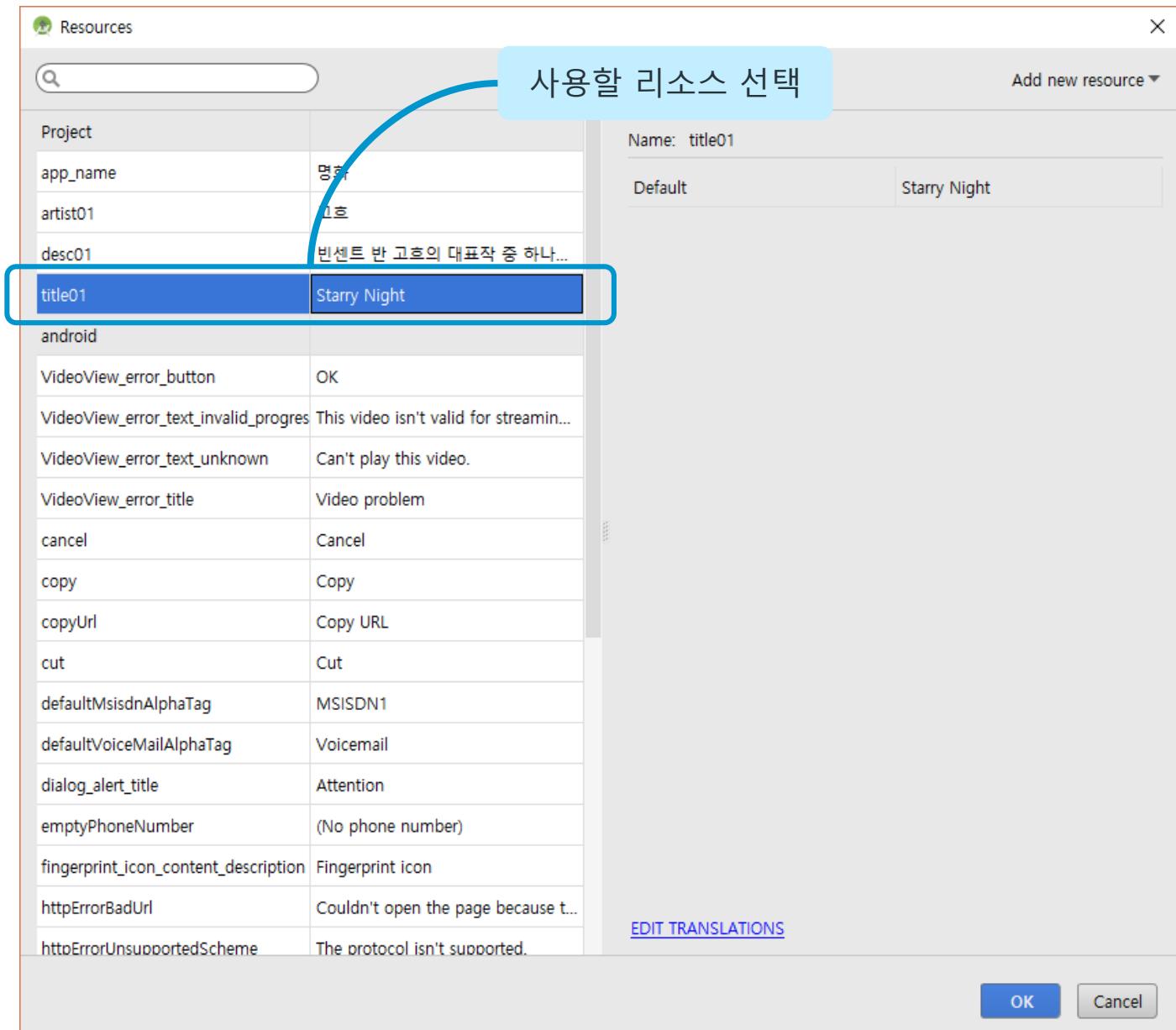
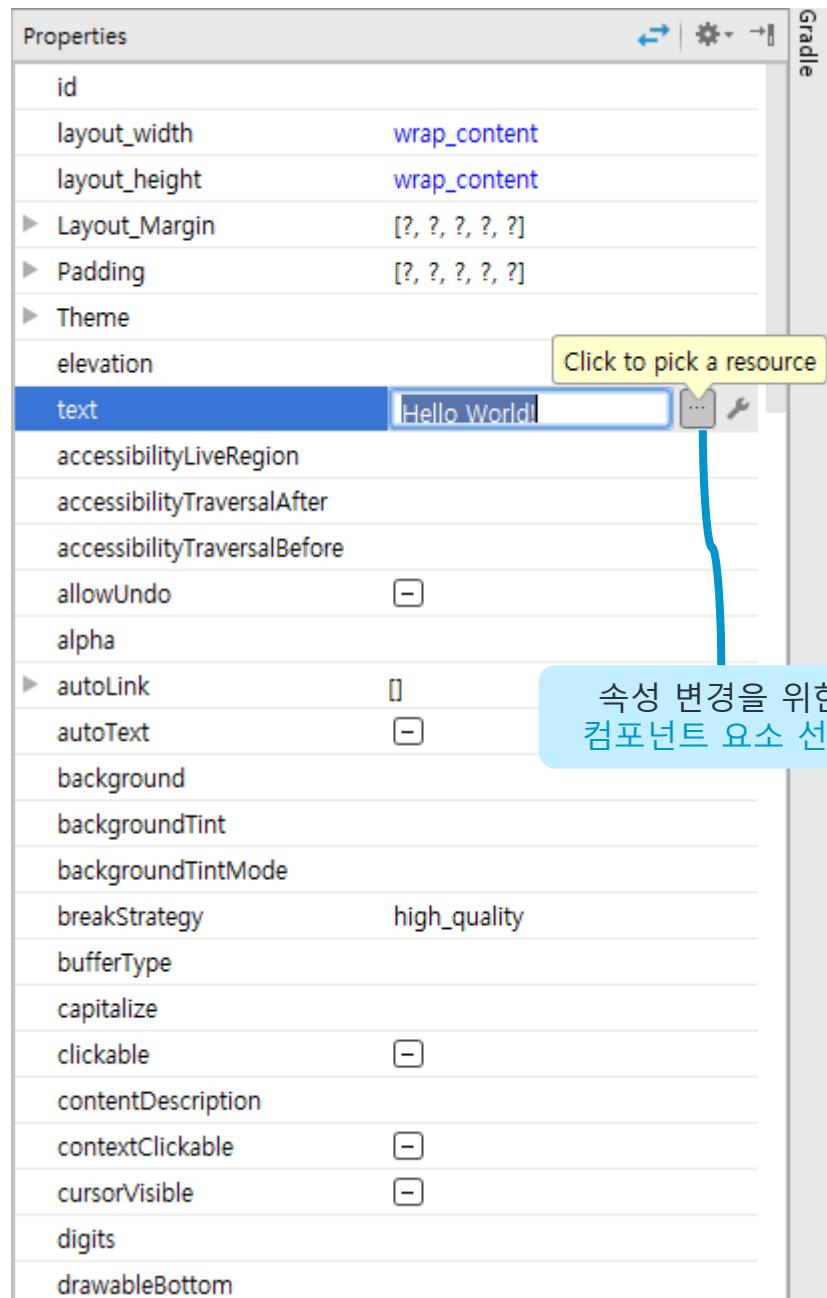


• Title TextView의 “Text” 속성 변경하기

The screenshot shows the Android Studio interface with the following components visible:

- Top Bar:** Shows tabs for activity_main.xml, shape_title.xml, strings.xml, and MainActivity.java.
- Toolbar:** Includes search, settings, and various icons for file operations.
- Palette:** On the left, under the "Images" category, an "ImageView" is selected.
- Component Tree:** Shows a "LinearLayout (vertical)" containing three "TextView"s: "textView", "textView2", and "imageView2".
- Design View:** Displays a blue header bar with the text "명화" (Painting) and a time indicator "7:00". Below it is a "TextView" with the text "TextView". At the bottom is a reproduction of Vincent van Gogh's "The Starry Night".
- Properties Panel:** On the right, the properties for the selected "textView" are listed. A callout bubble highlights the "text" property, which is currently set to "TextView". A note next to it says "해당 속성을 선택 후 값을 변경→ title01".

A blue bracket on the left side of the component tree highlights the "textView" node, with a callout bubble stating "속성 변경을 위한 컴포넌트 요소 선택".



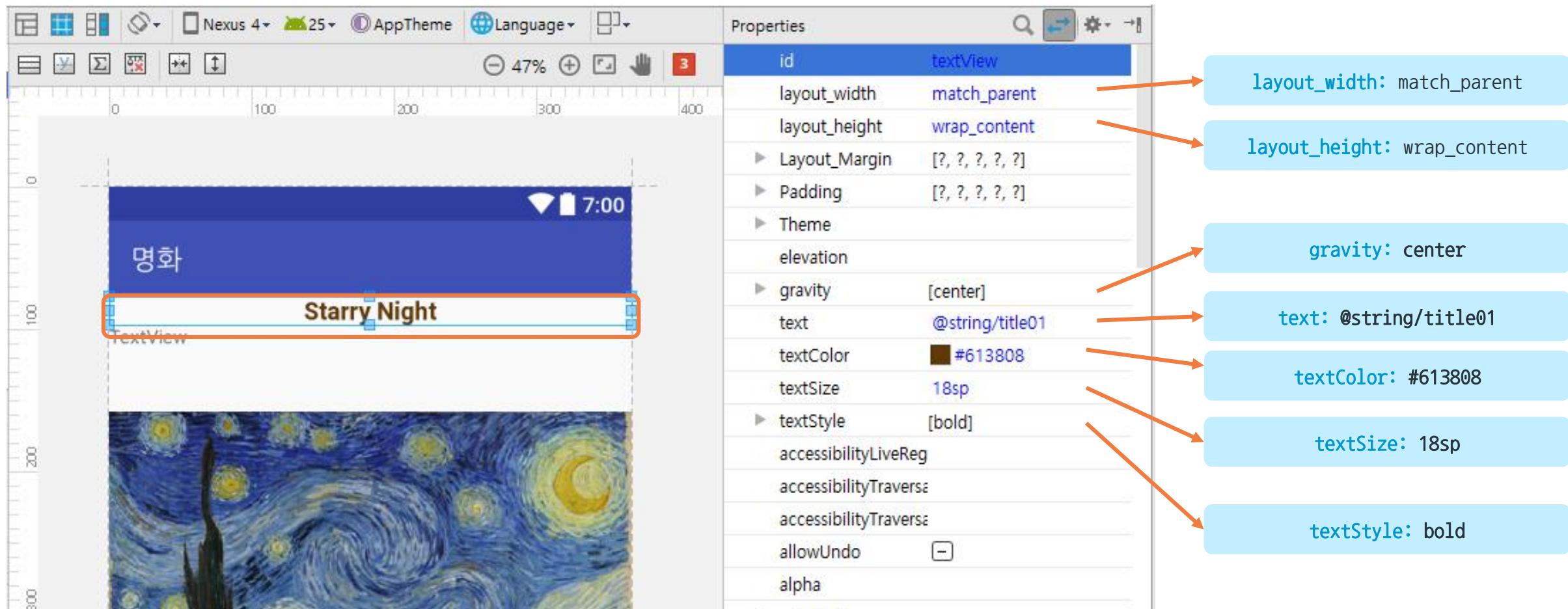
• title TextView의 “Text” 속성 변경 완료

The screenshot shows the Android Studio interface with the following components:

- Title Bar:** activity_main.xml, shape_title.xml, strings.xml, MainActivity.java.
- Toolbar:** Includes search, settings, and various icons for navigation and zoom.
- Palette:** Shows categories: All, Widgets, Text, Layouts, Containers, Images, Date, Transitions, Advanced, Google, Design, AppCompat. The "Images" category is currently selected.
- Properties Panel:** Lists properties for the selected view, including id (textView), layout_width (match_parent), layout_height (wrap_content), and text (@string/title01). The "text" property is highlighted with a blue border.
- Component Tree:** Shows the hierarchy: LinearLayout > textView - "@string/title01" > textView2 - TextView > imageView2 > textView3 - TextView.
- Layout Editor:** Displays a preview of the UI. It features a dark blue header bar with the text "명화" (Painting) and a smaller white bar below it containing "Starry Night". The main content area shows Vincent van Gogh's "Starry Night" painting.
- Code Editor:** Shows the Java code for MainActivity.java, which includes the declaration of textView and its binding to the string resource @string/title01.

```
public class MainActivity extends AppCompatActivity {  
    TextView textView;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        textView = (TextView) findViewById(R.id.textView);  
        textView.setText("@string/title01");  
    }  
}
```

• title 컴포넌트의 기타 속성 변경하기

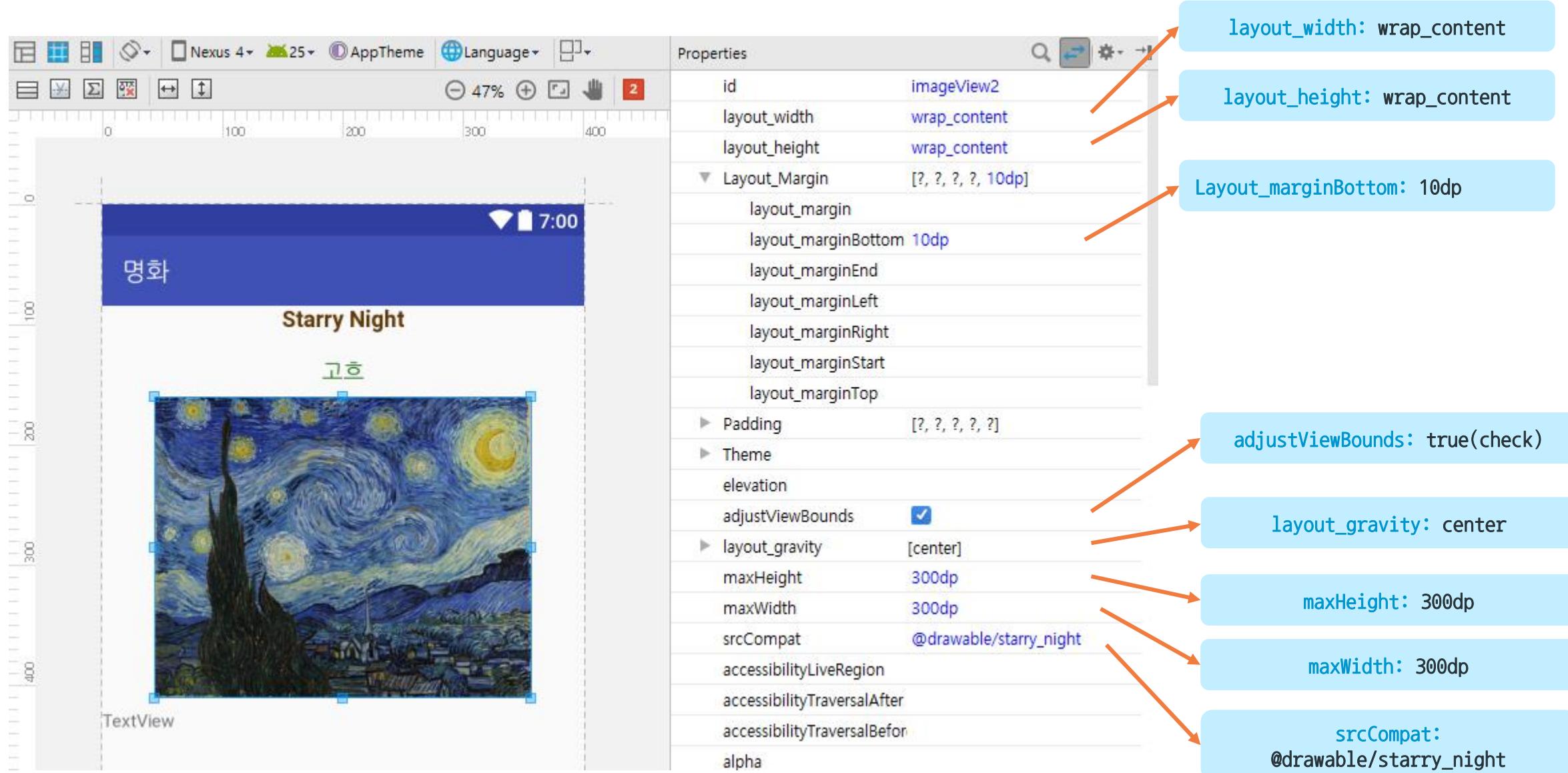


• artist TextView의 속성 변경

The screenshot shows the Android Studio XML layout editor. On the left is the visual layout editor with a blue header bar containing icons for file, edit, and navigation, followed by "Nexus 4", "25", "AppTheme", "Language", and a zoom level of "47%". Below the header is a toolbar with icons for selection, creation, and modification. The main area displays a layout with a blue header bar containing the text "명화" and "Starry Night", a white section with the text "고흐", and a large image of Vincent van Gogh's "Starry Night". A red selection handle is visible on the right side of the "Starry Night" image. On the right is the "Properties" panel, which lists the attributes of the selected TextView. Arrows point from specific attributes in the Properties panel to corresponding callout boxes on the right.

Properties	Value	Note
id	textView2	
layout_width	match_parent	layout_width: match_parent
layout_height	wrap_content	layout_height: wrap_content
Layout_Margin	[?, ?, 20dp, ?, 10dp]	
layout_margin		
layout_marginBottom	10dp	Layout_marginBottom: 10dp
layout_marginTop	20dp	Layout_marginTop: 20dp
layout_marginEnd		
layout_marginLeft		
layout_marginRight		
layout_marginStart		
► Padding	[?, ?, ?, ?, ?]	
► Theme		
elevation		
► gravity	[center]	gravity: center
text	@string/artist01	text: @string/artist01
textColor	#22741C	textColor: #22741C
textSize	18sp	textSize: 18sp
accessibilityLiveRegion		
accessibilityTraversalAfter		

• 이미지의 ImageView의 속성 변경



※ adjustViewBounds 이미지의 종횡비를 맞추기 위해 이미지 뷰의 크기를 적당히 조정할 것인가를 지정

• desc의 TextView의 속성 변경

The screenshot shows the Android Studio XML layout editor. On the left is the preview of the activity, which contains a navigation bar with '명화' (Painting) and '7:00', a title 'Starry Night', a subtitle '고흐', and a large image of Van Gogh's 'Starry Night'. Below the image is a text block in Korean. On the right is the 'Properties' panel for a TextView with id 'textView3'. The properties listed are:

- layout_width: match_parent
- layout_height: wrap_content
- text: @string/artist01
- textColor: #61380B
- textSize: 15sp

Arrows point from the corresponding entries in the Properties panel to their respective labels on the right.

Properties	Value
id	textView3
layout_width	match_parent
layout_height	wrap_content
Layout_Margin	[?, ?, ?, ?, ?]
Padding	[?, ?, ?, ?, ?]
Theme	
elevation	
text	@string/desc01
textColor	#61380B
textSize	15sp
accessibilityLiveRegion	
accessibilityTraversalAfter	
accessibilityTraversalBefore	
allowUndo	-
alpha	
autoLink	-
autoText	-
background	
backgroundTint	
backgroundTintMode	
breakStrategy	
bufferType	
capitalize	
clickable	-
contentDescription	
contextClickable	-
cursorVisible	-
digits	

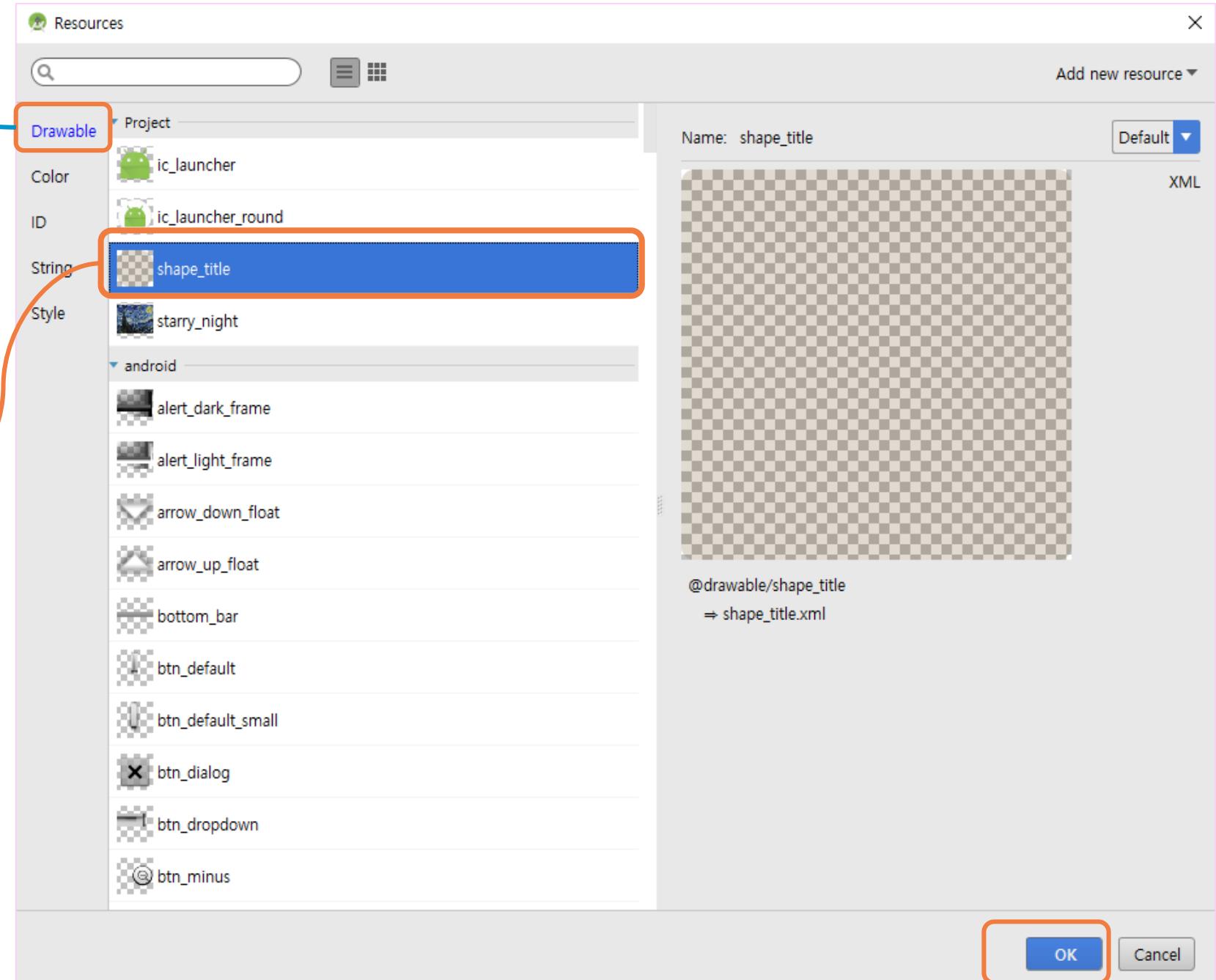
• `shape_title.xml`을 이용한 제목바의 배경 처리

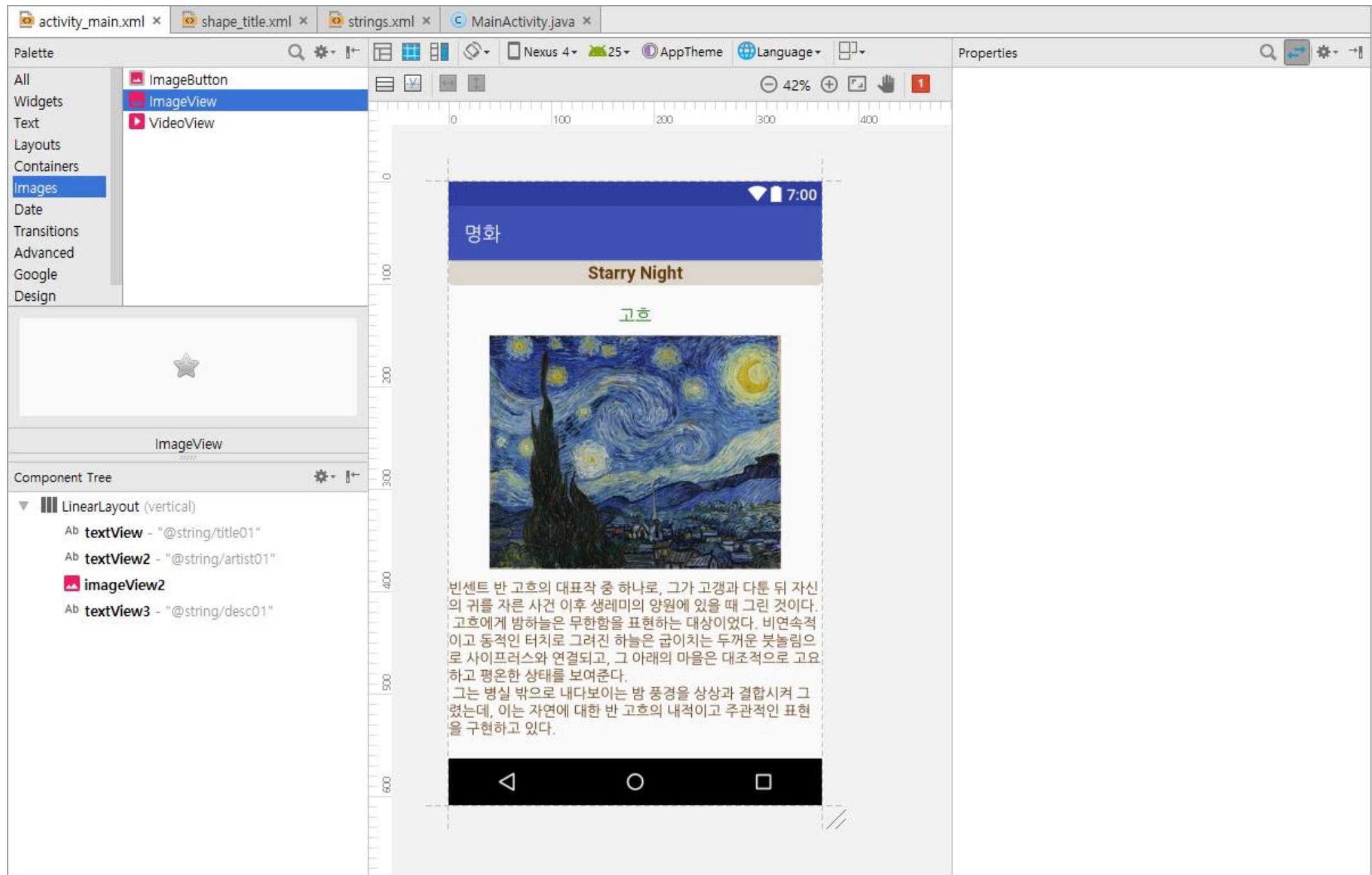
The screenshot shows the Android Studio XML Layout Editor with the following details:

- Top Bar:** activity_main.xml, shape_title.xml, strings.xml, MainActivity.java.
- Palette:** All, Widgets, Text, Layouts, Containers, Images (selected), Date, Transitions, Advanced, Google, Design.
- Component Tree:** Linear layout (vertical) containing:
 - textView - "@string/title01" (highlighted with a blue box)
 - Ab textView2 - "@string/artist01"
 - imageView2 (highlighted with a blue box)
 - Ab textView3 - "@string/desc01"
- Properties Panel:** Shows properties for the selected `textView`. The `background` property is also highlighted with a blue box.
- Preview:** Displays the Android application interface. It features a dark blue header bar with the text "명화" (Painting) and "7:00". Below the header is a white bar with the text "Starry Night" and "고흐". The main content area displays Vincent van Gogh's "Starry Night" painting. At the bottom, there is a black navigation bar with three icons: a triangle, a circle, and a square.

Resources 종류:
Drawable

선택





• 화면 상하좌우에 여백주기

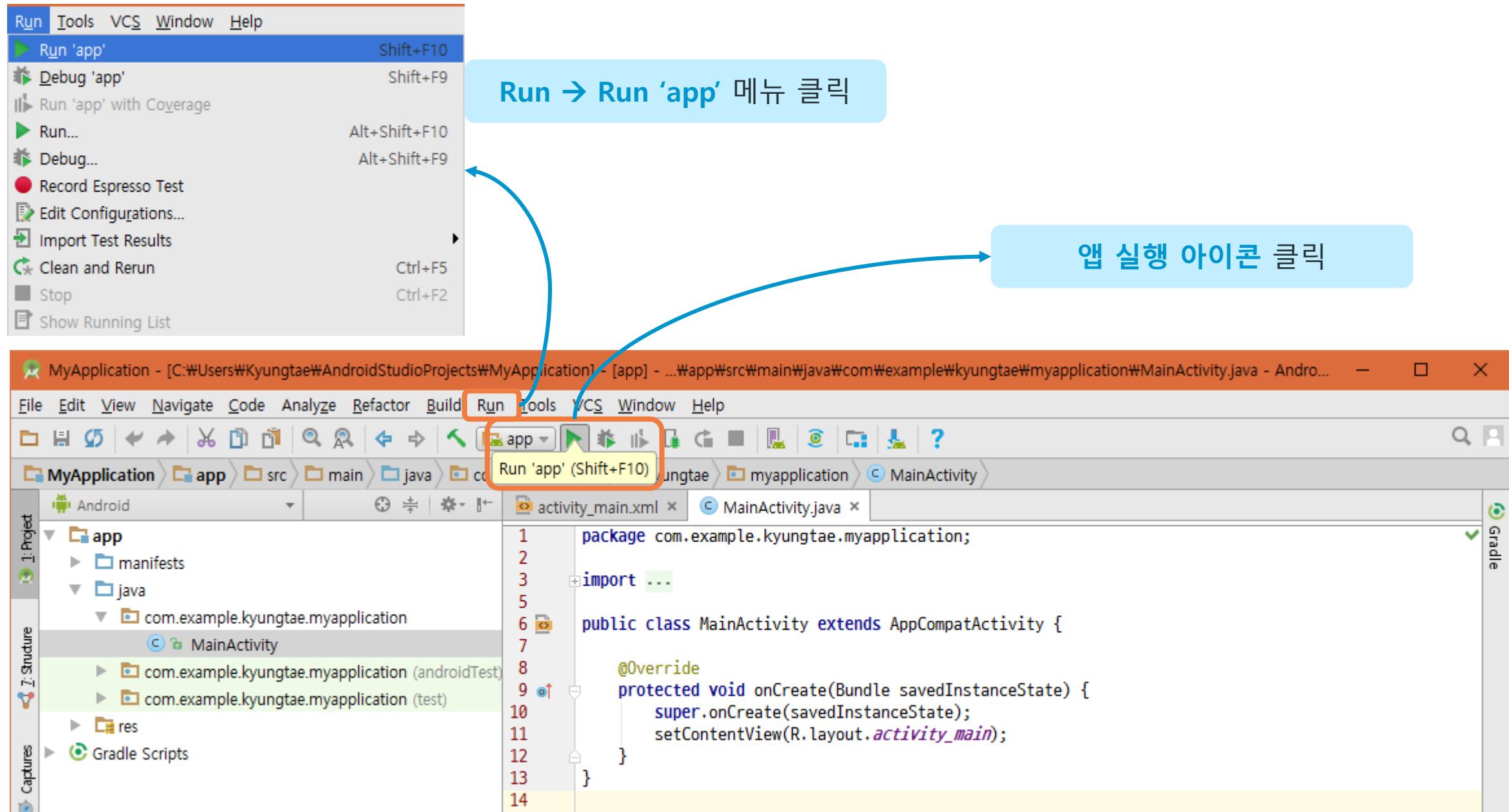
The screenshot shows the Android Studio interface with the layout editor open for the file `activity_main.xml`. The `Palette` on the left lists various UI components under the `Images` category. In the center, a preview window displays a mobile application screen with a blue header containing Korean text "명화" and "Starry Night", a green title bar with "고흐", and a large image of Vincent van Gogh's "Starry Night". Below the image is a descriptive text block. The `Properties` panel on the right shows numerous properties for the selected ImageView component. A red box highlights the `Layout_Margin` property, which is set to `[5sp, ?, ?, ?, ?]`. The `Component Tree` panel on the left shows the structure of the layout, including a `LinearLayout` containing `textView`, `textView2`, `imageView2`, and `textView3`.

Properties for the selected ImageView component:

- `id`
- `layout_width`: `match_parent`
- `layout_height`: `match_parent`
- `Constraints`
- `Layout_Margin`: `[5sp, ?, ?, ?, ?]`
- `layout_margin`: `5sp`
- `layout_marginBottom`
- `layout_marginEnd`
- `layout_marginLeft`
- `layout_marginRight`
- `layout_marginStart`
- `layout_marginTop`
- `Padding`: `[?, ?, ?, ?, ?]`
- `Theme`
- `elevation`
- `context`: `com.example.kyungtae.famouspaintings`
- `orientation`: `vertical`
- `accessibilityLiveRegion`
- `accessibilityTraversalAfter`
- `accessibilityTraversalBefore`
- `actionBarNavMode`
- `addStatesFromChildren`
- `alpha`
- `alwaysDrawnWithCache`
- `animateLayoutChanges`
- `animationCache`
- `background`
- `backgroundTint`
- `backgroundTintMode`
- `baselineAligned`

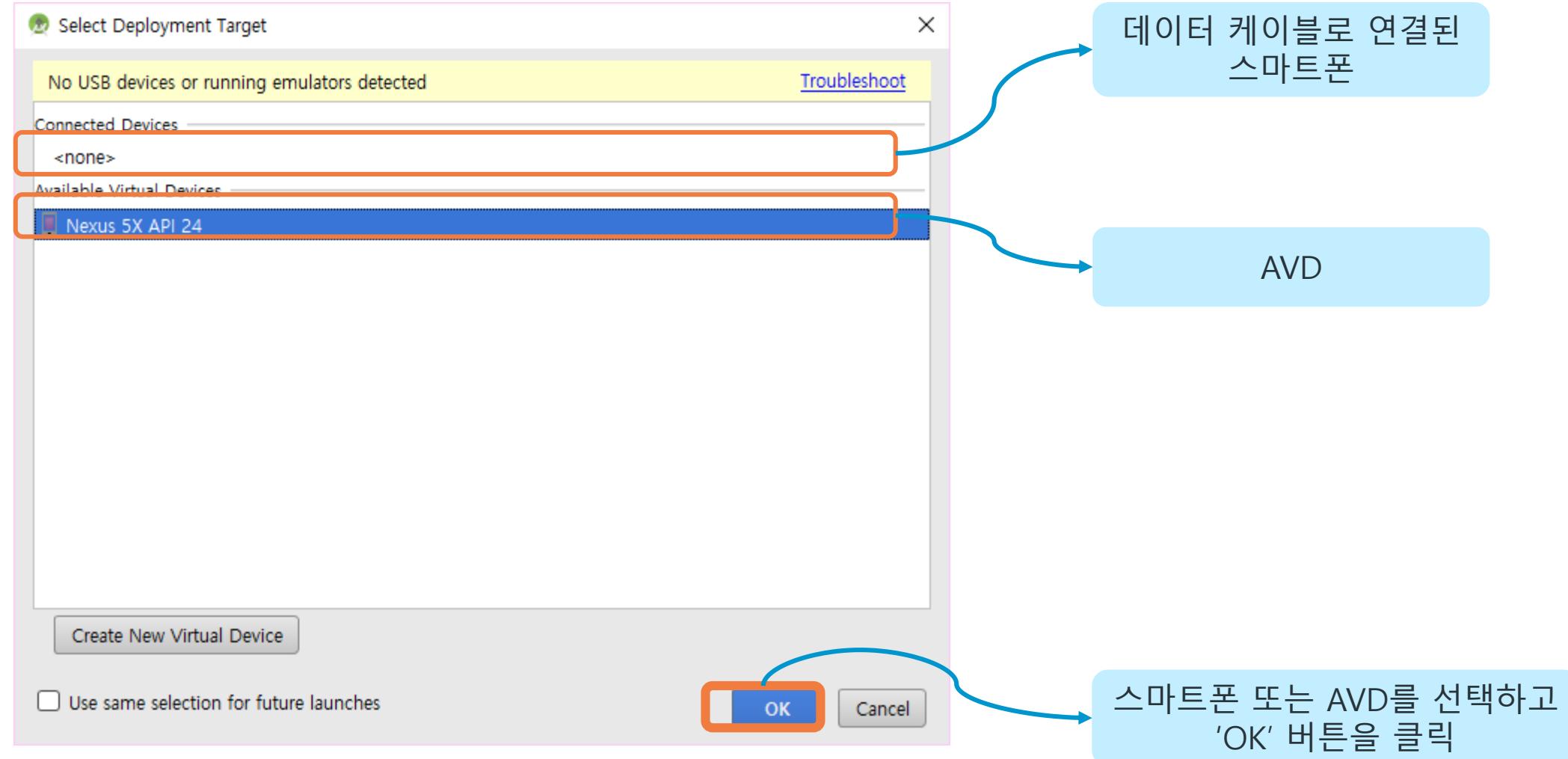
Step 3. 프로젝트 실행

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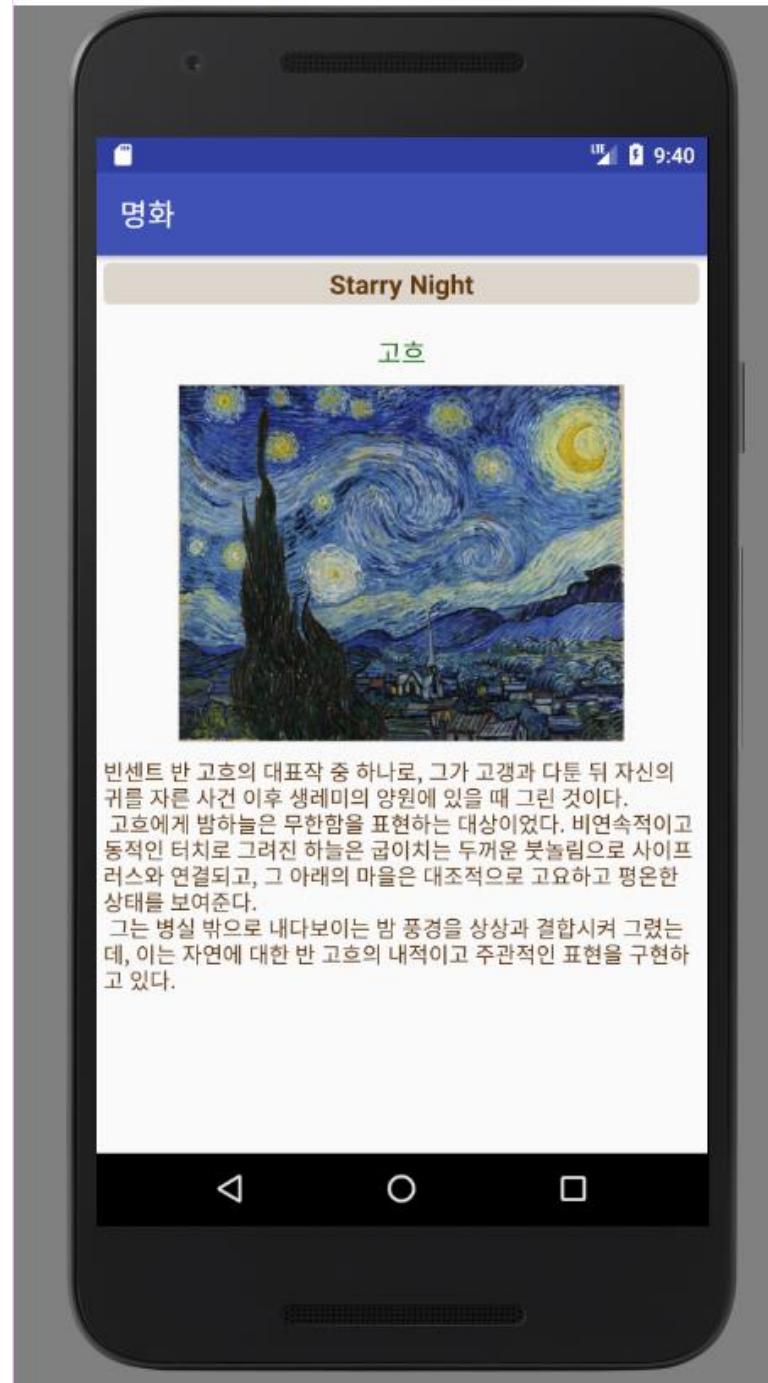
• AVD 장비 선택하기

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O outputs

Android Emulator - Nexus_5X_API_24:5554





question

&



answer

