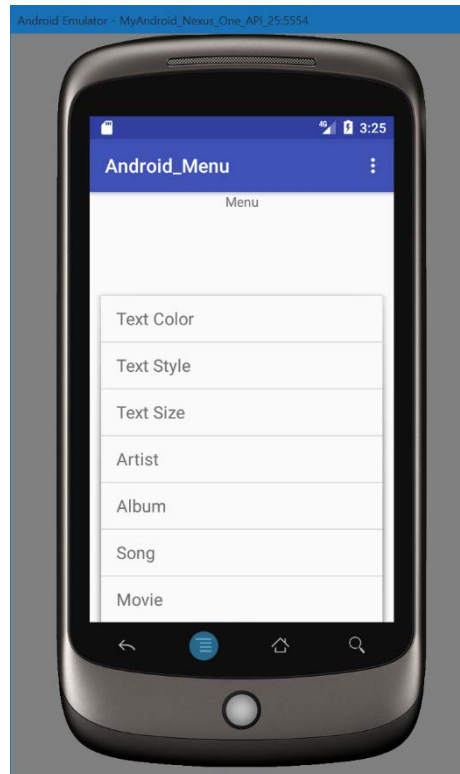# Menu 구현

학습 목표

■ 교육 목표
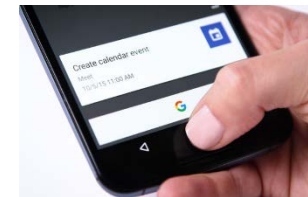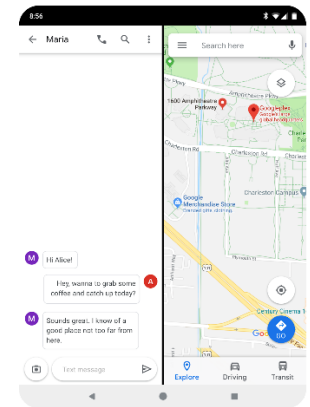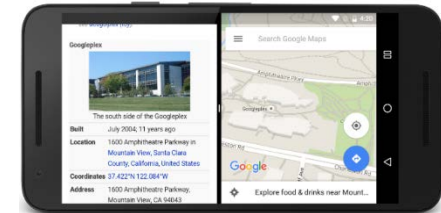
❖ Menu

❖ Options Menu

◆ Icon Menu

◆ Expanded Menu

❖ Context Menu

Menu (1)

Menu

❖ 기능

◆ Activity에 표시할 메뉴를 나타내는 기능

❖ 종류

◆ Options menus

- Shortcut, item icon을 지원하지 않음

◆ Context menus

- Item check mark 지원하지 않음
- Condensed title 지원
- Expanded menus 지원

◆ Sub menus

- item icon을 지원하지 않음

public interface
Menu

android.view.Menu

▶Known Indirect Subclasses
ContextMenu, SubMenu

Menu (2)

Constants

Constants		
int	CATEGORY_ALTERNATIVE	Category code for the order integer for items/groups that are alternative actions on the data that is currently displayed -- or/add this with your base value.
int	CATEGORY_CONTAINER	Category code for the order integer for items/groups that are part of a container -- or/add this with your base value.
int	CATEGORY_SECONDARY	Category code for the order integer for items/groups that are user-supplied secondary (infrequently used) options -- or/add this with your base value.
int	CATEGORY_SYSTEM	Category code for the order integer for items/groups that are provided by the system -- or/add this with your base value.
int	FIRST	First value for group and item identifier integers.
int	FLAG_ALWAYS_PERFORM_CLOSE	Flag for `performShortcut(int, KeyEvent, int)`: if set, always close the menu after executing the shortcut.
int	FLAG_APPEND_TO_GROUP	Flag for `addIntentOptions(int, int, int, ComponentName, Intent[], Intent, int, MenuItem[])`: if set, do not automatically remove any existing menu items in the same group.
int	FLAG_PERFORM_NO_CLOSE	Flag for `performShortcut(int, KeyEvent, int)`: if set, do not close the menu after executing the shortcut.
int	NONE	Value to use for group and item identifier integers when you don't care about them.

Menu (3)

■ Method

public abstract MenuItem **add** (int titleRes)

Add a new item to the menu. This item displays the given title for its label.

Parameters

titleRes   Resource identifier of title string.

Returns

The newly added menu item.

Public Methods	
abstract MenuItem	add (int titleRes) Add a new item to the menu.
abstract MenuItem	add (int groupId, int itemId, int order, CharSequence title) Add a new item to the menu.
abstract MenuItem	add (int groupId, int itemId, int order, int titleRes) Variation on add(int, int, int, CharSequence) that takes a string resource identifier instead of the string itself.
abstract MenuItem	add (CharSequence title) Add a new item to the menu.
abstract int	addIntentOptions (int groupId, int itemId, int order, ComponentName caller, Intent[] specifics, Intent intent, int flags, MenuItem[] outSpecificItems) Add a group of menu items corresponding to actions that can be performed for a particular Intent.
abstract SubMenu	addSubMenu (int titleRes) Add a new sub-menu to the menu.
abstract SubMenu	addSubMenu (int groupId, int itemId, int order, int titleRes) Variation on addSubMenu(int, int, int, CharSequence) that takes a string resource identifier for the title instead of the string itself.
abstract SubMenu	addSubMenu (CharSequence title) Add a new sub-menu to the menu.
abstract SubMenu	addSubMenu (int groupId, int itemId, int order, CharSequence title) Add a new sub-menu to the menu.
abstract void	clear () Remove all existing items from the menu, leaving it empty as if it had just been created.
abstract void	close () Closes the menu, if open.

Menu (4)

abstract MenuItem	**findItem** (int id) Return the menu item with a particular identifier.
abstract MenuItem	**getItem** (int index) Gets the menu item at the given index.
abstract boolean	**hasVisibleItems** () Return whether the menu currently has item items that are visible.
abstract boolean	**isShortcutKey** (int keyCode, KeyEvent event) Is a keypress one of the defined shortcut keys for this window.
abstract boolean	**performIdentifierAction** (int id, int flags) Execute the menu item action associated with the given menu identifier.
abstract boolean	**performShortcut** (int keyCode, KeyEvent event, int flags) Execute the menu item action associated with the given shortcut character.
abstract void	**removeGroup** (int groupId) Remove all items in the given group.
abstract void	**removeItem** (int id) Remove the item with the given identifier.
abstract void	**setGroupCheckable** (int group, boolean checkable, boolean exclusive) Control whether a particular group of items can show a check mark.
abstract void	**setGroupEnabled** (int group, boolean enabled) Enable or disable all menu items that are in the given group.
abstract void	**setGroupVisible** (int group, boolean visible) Show or hide all menu items that are in the given group.
abstract void	**setQwertyMode** (boolean isQwerty) Control whether the menu should be running in qwerty mode (alphabetic shortcuts) or 12-key mode (numeric shortcuts).
abstract int	**size** () Get the number of items in the menu.

Options Menu (1)

Options Menu

❖ 기능

◆ 현재 실행 중인 Activity를 위한 Menu (Menu button click시 나타남)

❖ onCreateOptionsMenu (Menu menu)

◆ option menu 호출 시 한번 실행

public boolean onCreateOptionsMenu (Menu menu)	
parameter	시스템에 의해 생성된 menu 객체
return	true / false = 화면 출력 / 화면 출력 안됨

❖ onPrepareOptionsMenu (Menu menu)

◆ option menu 화면 출력 전에 항상 호출
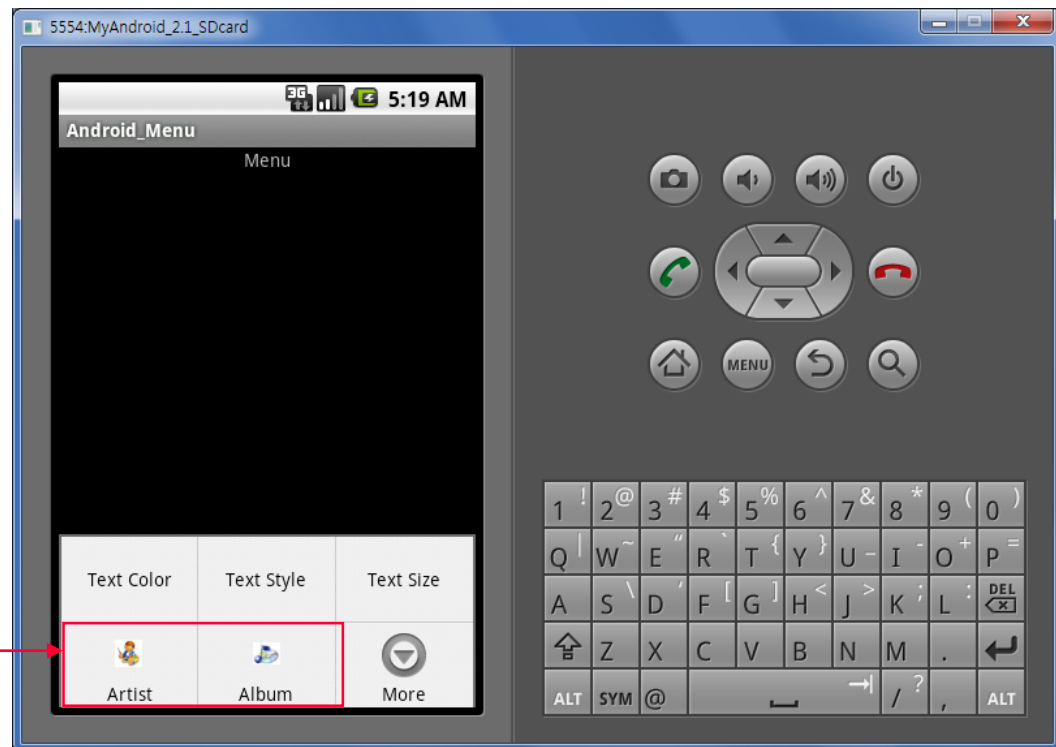
public boolean onPrepareOptionsMenu (Menu menu)	
parameter	이 메소드를 호출한 Activity의 option menu
return	true / false = 화면 출력 / 화면 출력 안됨

Options Menu (2)

❖ Icon Menu

◆ Android screen 하단에서 상승

◆ 최대 6 개까지의 text + icon(옵션) 형태 메뉴 표시

◆ 마지막 6번째 icon menu 버튼은 more로 표시

Icon Menu

Options Menu (3)

❖ Expanded Menu

◆ option menu의 총 항목 개수가 6개

◆ 마지막 6번째 icon menu 버튼이 more로 표시되었을 때 이를 사용하면
출력되는 text기반 list 형식의 메뉴
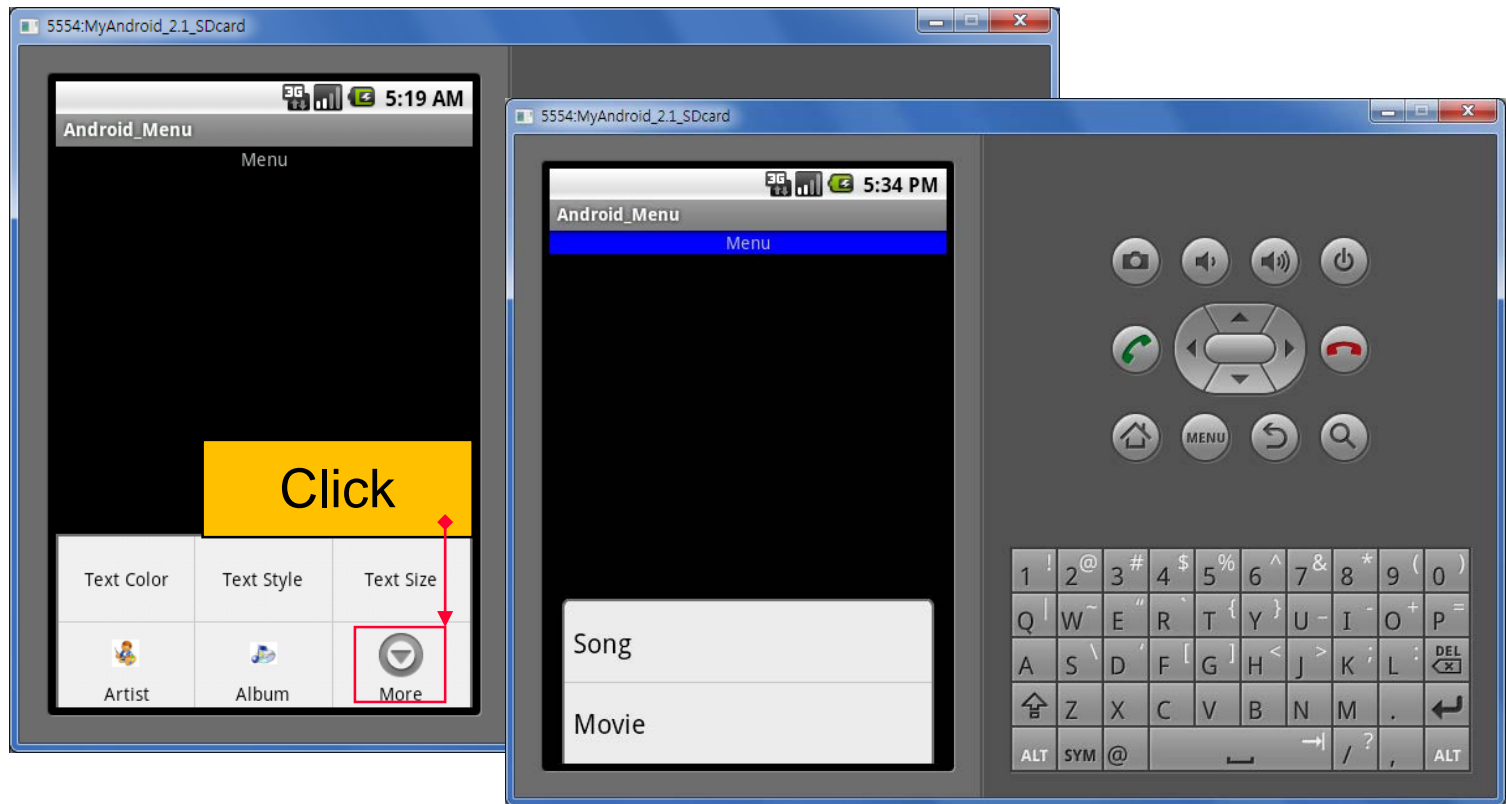
Context Menu

■ Context Menu

❖ 기능

◆ Activity 내부의 view가 제공하는 text기반의 list 메뉴

❖ registerForContextMenu (View view)

◆ Context Menu 제공 view임을 Activity에 알리는 메소드

public void registerForContextMenu (View view)	
parameter	Context Menu 제공 view 지정

❖ onCreateContextMenu (Menu menu)

◆ Context menu 화면 출력 전에 항상 호출

public void onCreateContextMenu (ContextMenu menu, View v, ContextMenu.ContextMenuInfo menuInfo)	
parameters	• menu : 시스템에 의해 생성된 Context Menu 객체 • v : Context Menu를 소유한 view 인스턴스 • menuInfo : context menu가 표현할 menu item에 대한 추가 정보 전달 기능

Menu 구현 (1)

■ Android 프로젝트 생성

❖ 프로젝트 명 : Android_Menu

Menu 구현 (2)

Create New Project — Choose your project

Phone and Tablet | Wear OS | TV | Android Auto | Android Things

Add No Activity

Basic Activity

Empty Activity ← 2. Select

Fullscreen Activity | Master/Detail Flow | Navigation Drawer Activity | Google Maps Activity

Empty Activity

Creates a new empty activity

3. Click

Previous | Next | Cancel | Finish
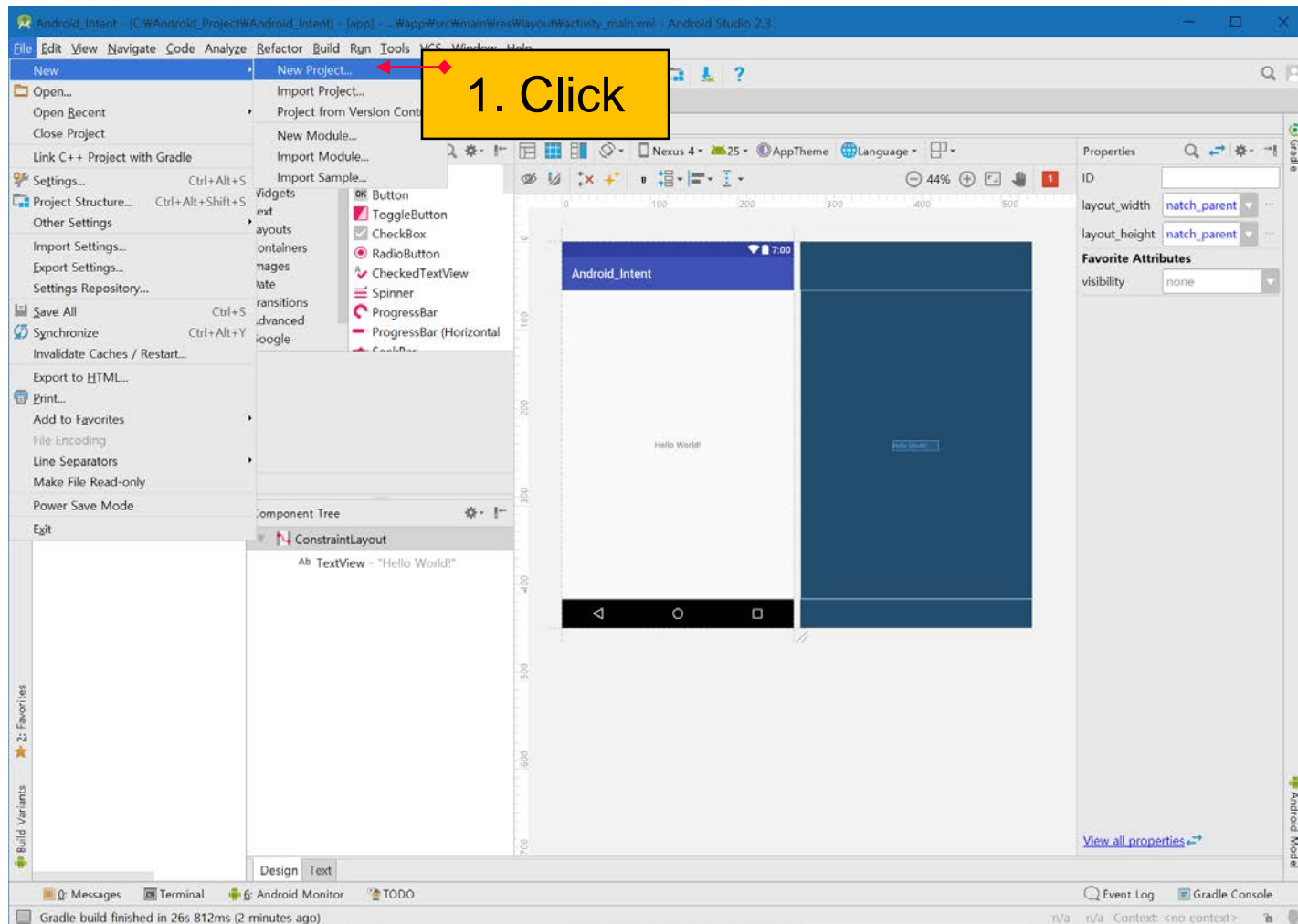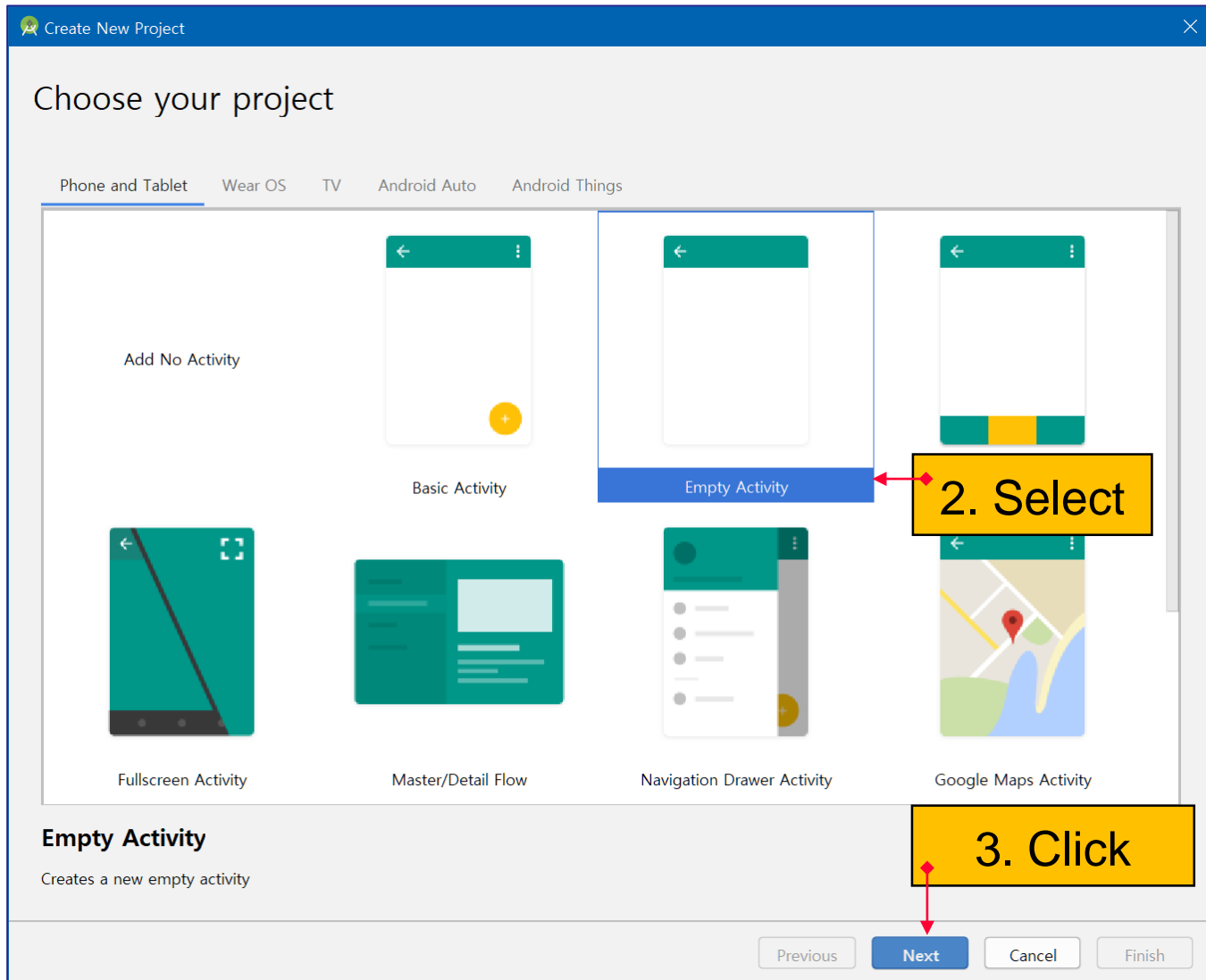
Menu 구현 (3)

Create New Project

Configure your project

Empty Activity

Creates a new empty activity

Name

Android_Menu ← **4. Input "Android_Menu"**

Package name

com.inhatc.android_menu ← **5. Input "com.inhatc.android_menu"**

Save location

C:\Android_Project\Android_Menu

Language

Java ← **6. Select**

Minimum API level

API 26: Android 8.0 (Oreo) ← **7. Select**

ℹ Your app will run on approximately **6.0%** of devices.
Help me choose

☐ This project will support instant apps
☐ Use AndroidX artifacts

8. Click

Previous   Next   Cancel   **Finish**

Menu 구현 (4)

❖ Android 프로젝트 생성 완료
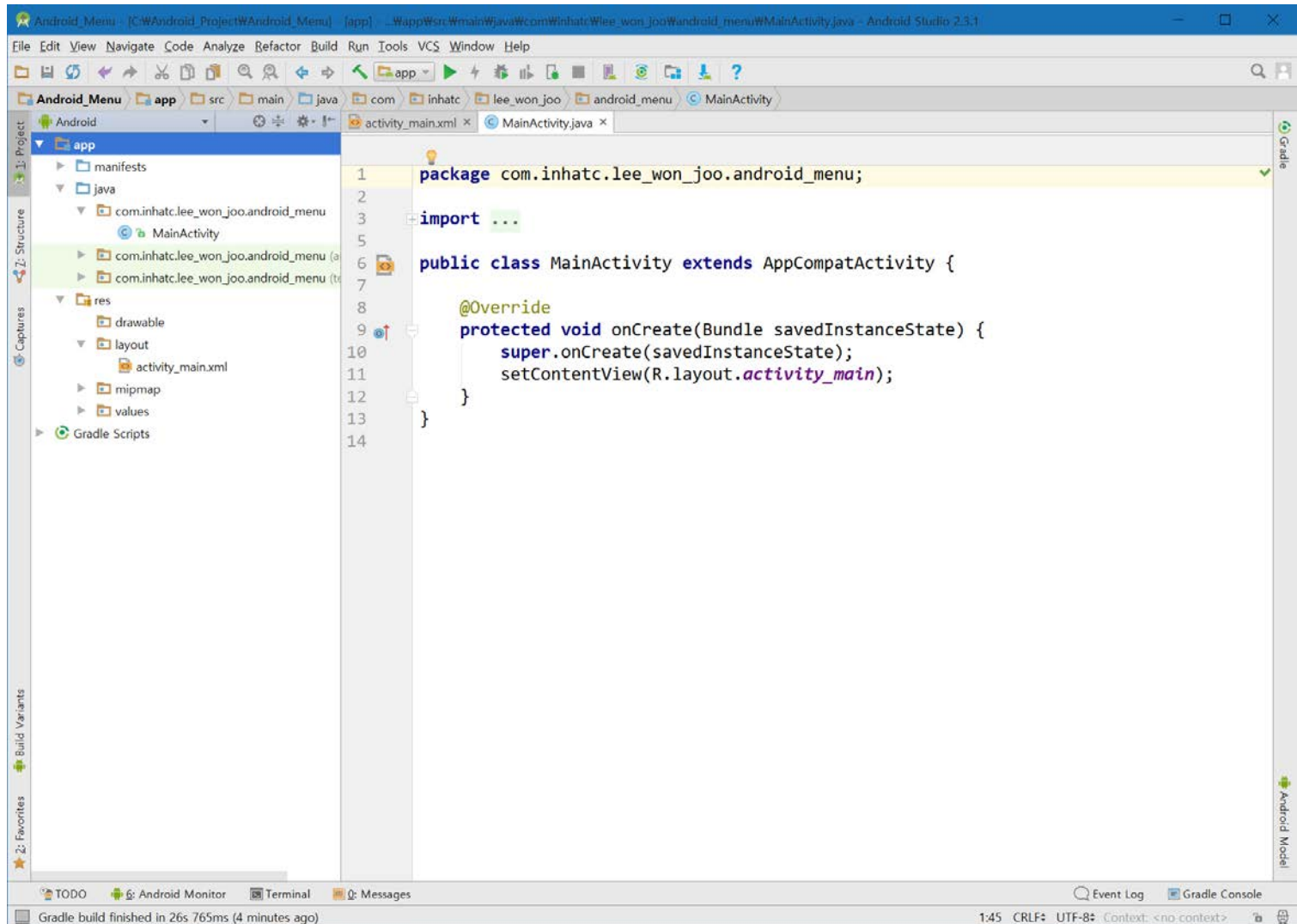
Menu 구현 (5)

■ UI 설계

Menu 구현 (6)

❖ TextView 속성 지정

Menu 구현 (7)

❖ TextView 속성 지정

| 컨트롤	속성 지정
TextView	• android:id="@+id/textView1" • android:layout_width="match_parent" • android:layout_height="wrap_content" • android:text="Menu" • android:gravity="center" • android:layout_gravity="center"

Menu 구현 (8)

❖ activity_main.xml

```xml
activity_main.xml ×

1   <?xml version="1.0" encoding="utf-8"?>
2   <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3       xmlns:app="http://schemas.android.com/apk/res-auto"
4       xmlns:tools="http://schemas.android.com/tools"
5       android:layout_width="match_parent"
6       android:layout_height="match_parent"
7       tools:context="com.inhatc.lee_won_joo.android_menu.MainActivity">
8
9       <TextView
10          android:id="@+id/textView1"
11          android:layout_width="match_parent"
12          android:layout_height="wrap_content"
13          android:text="Menu"
14          android:gravity="center"
15          android:layout_gravity="center" />
16
17  </RelativeLayout>

Design  Text
```

10. XML code 추가 확인

Menu 구현 (9)

❖ TextView 속성 지정 결과

11. TextView 속성 지정 결과
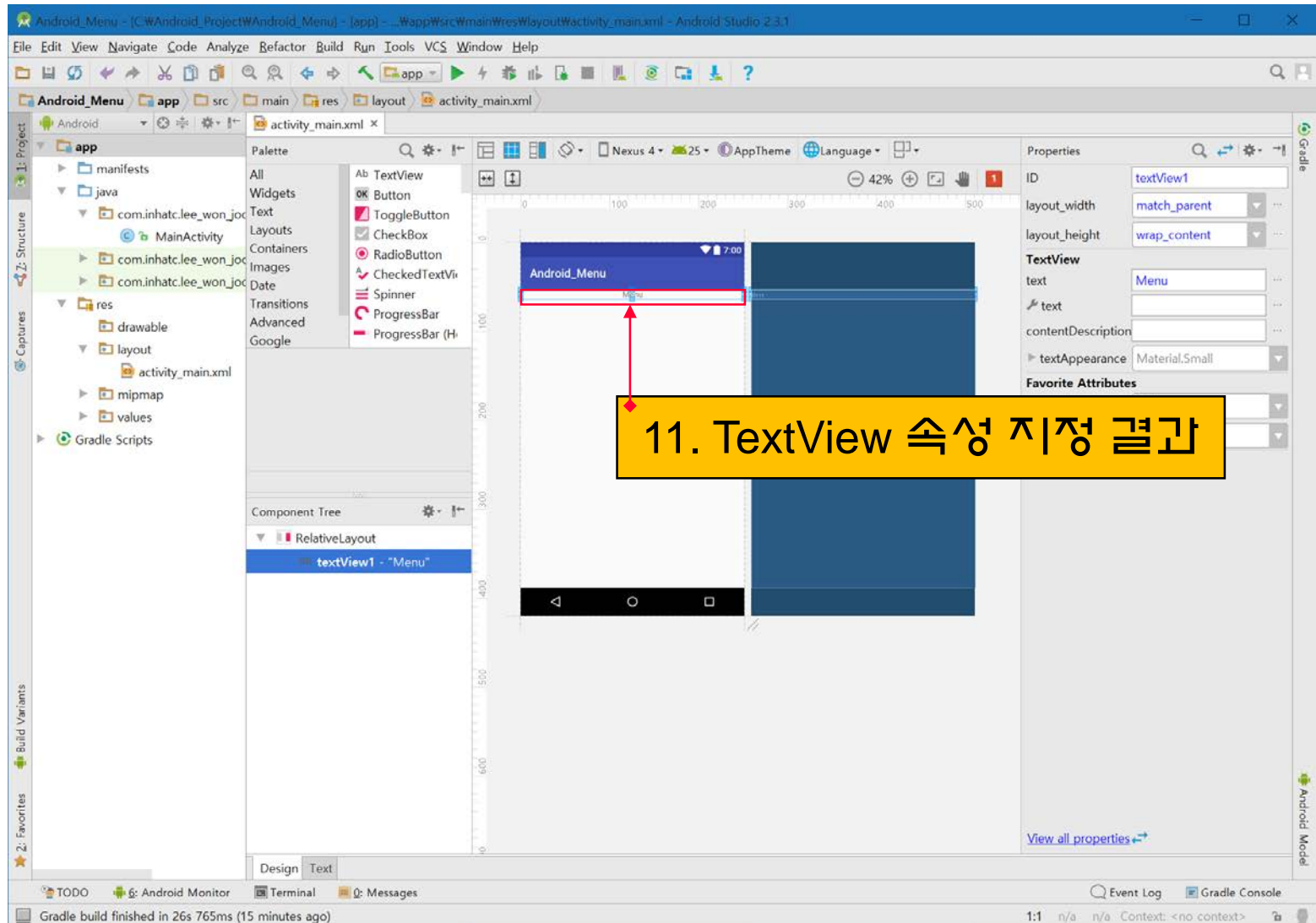
Menu 구현 (10)

❖ activity_main.xml 저장
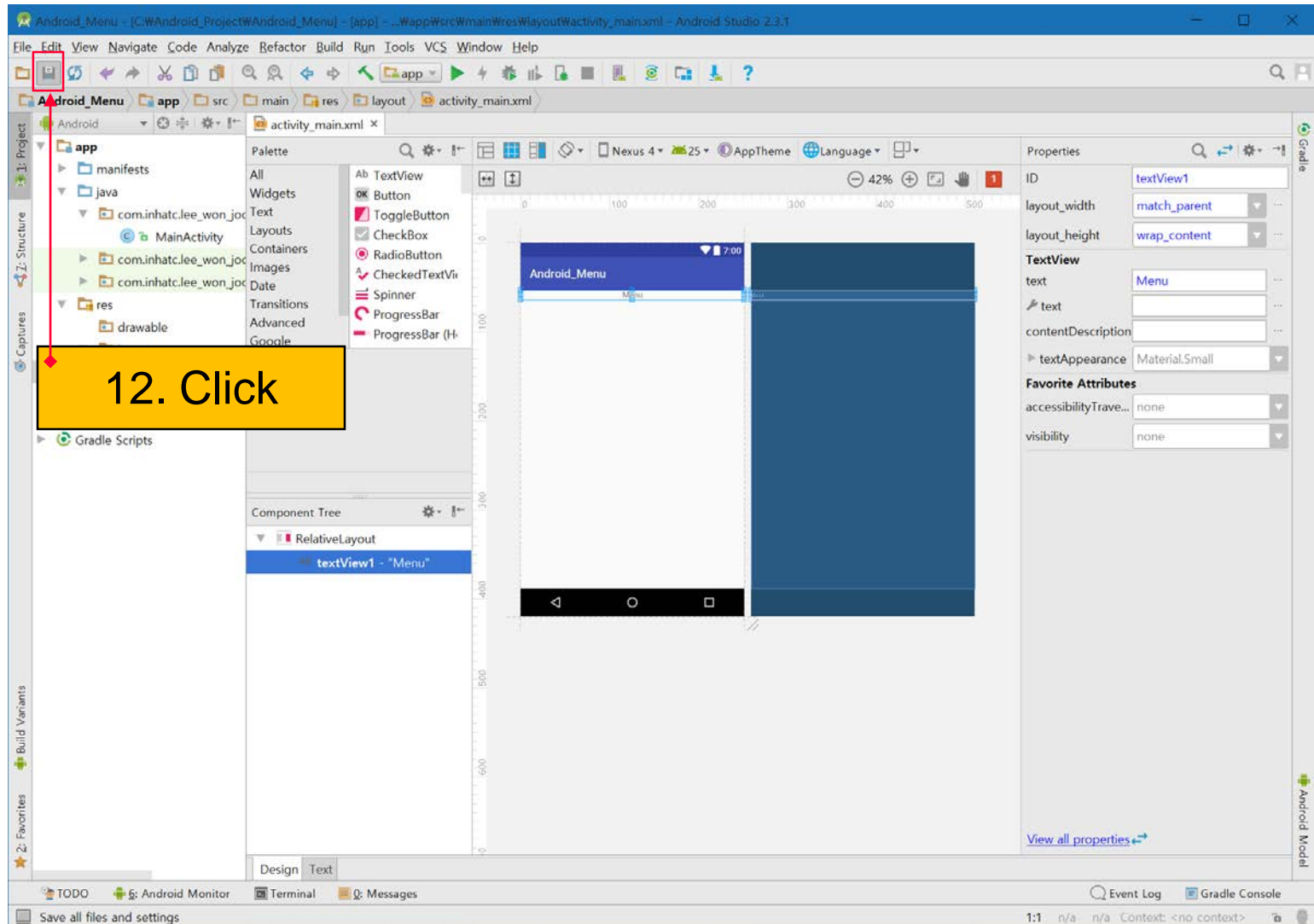
Menu 구현 (11)

❖ Image 파일 import 확인

◆ album.png

◆ artist.png

◆ song.png
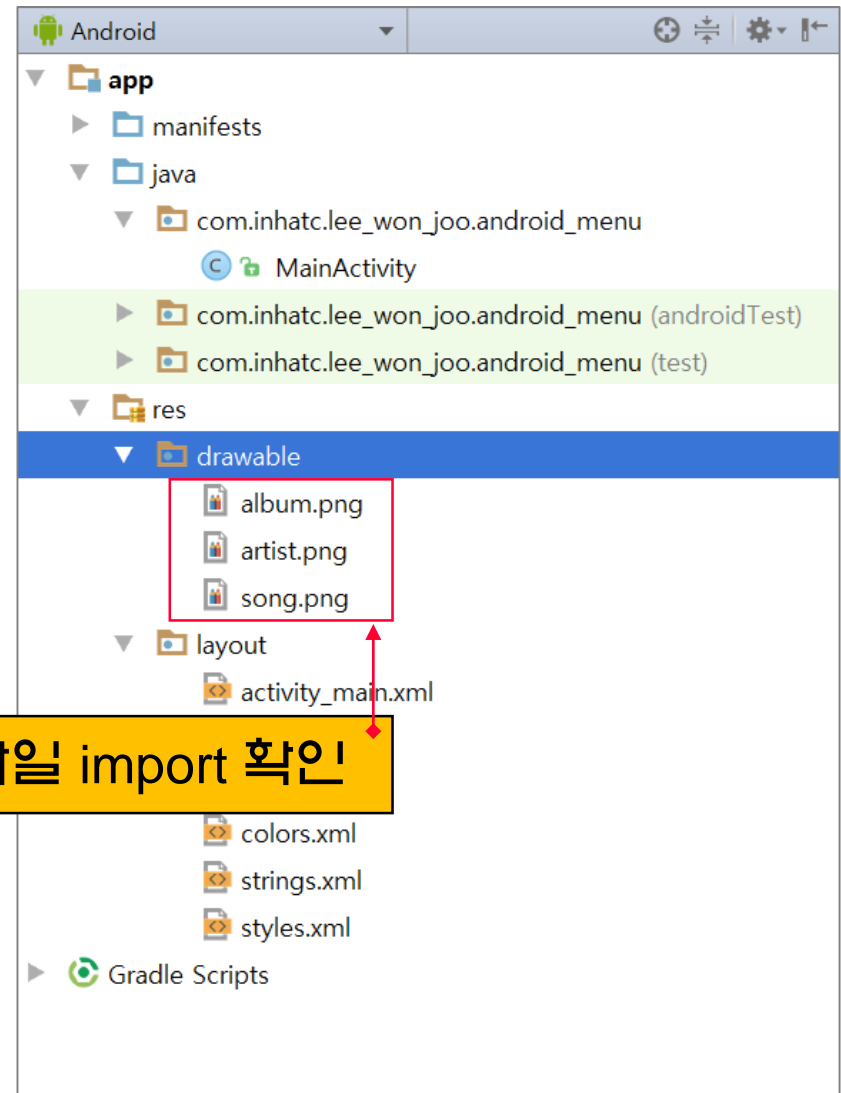
13. Image 파일 import 확인

Menu 구현 (12)

❖ onCreate() Method 구현

```java
MainActivity.java ✕

 1    package com.inhatc.lee_won_joo.android_menu;
 2
 3    import android.support.v7.app.AppCompatActivity;
 4    import android.os.Bundle;
 5    import android.widget.TextView;
 6
 7    public class MainActivity extends AppCompatActivity {
 8
 9        TextView objTxtView;        //TextView object
10
11        @Override
12        protected void onCreate(Bundle savedInstanceState) {
13            super.onCreate(savedInstanceState);
14            setContentView(R.layout.activity_main);
15
16            objTxtView = (TextView)findViewById(R.id.textView1);
17
18            //Support context menu
19            registerForContextMenu(objTxtView);
20
21        }
22    }
```

14. Coding

Menu 구현 (13)

❖ Method 추가

Menu 구현 (14)

❖ onCreateOptionMenu() method 구현

```
  MainActivity.java ×

13        @Override
14        protected void onCreate(Bundle savedInstanceState) {...}
24
25        /**...*/
51        @Override
52        public boolean onCreateOptionsMenu(Menu menu) {
53            SubMenu mnuTextColor = menu.addSubMenu("Text Color");
54            SubMenu mnuTextStyle = menu.addSubMenu("Text Style");
55            SubMenu mnuTextSize = menu.addSubMenu("Text Size");
56
57            SubMenu mnuArtist = menu.addSubMenu("Artist");
58            mnuArtist.setIcon(R.drawable.artist);
59
60            SubMenu mnuAlbum = menu.addSubMenu("Album");
61            mnuAlbum.setIcon(R.drawable.album);
62
63            SubMenu mnuSong = menu.addSubMenu("Song");
64            mnuSong.setIcon(R.drawable.song);
65
66            SubMenu mnuMovie = menu.addSubMenu("Movie");
67
68            return super.onCreateOptionsMenu(menu);
69        }
70
71    }
```

18. Coding

Menu 구현 (15)

❖ Method 추가

Menu 구현 (16)

❖ onPrepareOptionMenu() method 구현

```java
25      /**...*/
51      @Override
52      public boolean onCreateOptionsMenu(Menu menu) {
53          SubMenu mnuTextColor = menu.addSubMenu("Text Color");
54          SubMenu mnuTextStyle = menu.addSubMenu("Text Style");
55          SubMenu mnuTextSize = menu.addSubMenu("Text Size");
56
57          SubMenu mnuArtist = menu.addSubMenu("Artist");
58          mnuArtist.setIcon(R.drawable.artist);
59
60          SubMenu mnuAlbum = menu.addSubMenu("Album");
61          mnuAlbum.setIcon(R.drawable.album);
62
63          SubMenu mnuSong = menu.addSubMenu("Song");
64          mnuSong.setIcon(R.drawable.song);
65
66          SubMenu mnuMovie = menu.addSubMenu("Movie");
67
68          return super.onCreateOptionsMenu(menu);
69      }
70
71      /**...*/
87      @Override
88      public boolean onPrepareOptionsMenu(Menu menu) {
89
90          return super.onPrepareOptionsMenu(menu);
91      }
92  }
```

22. Coding

Menu 구현 (17)

❖ Android 프로젝트 실행
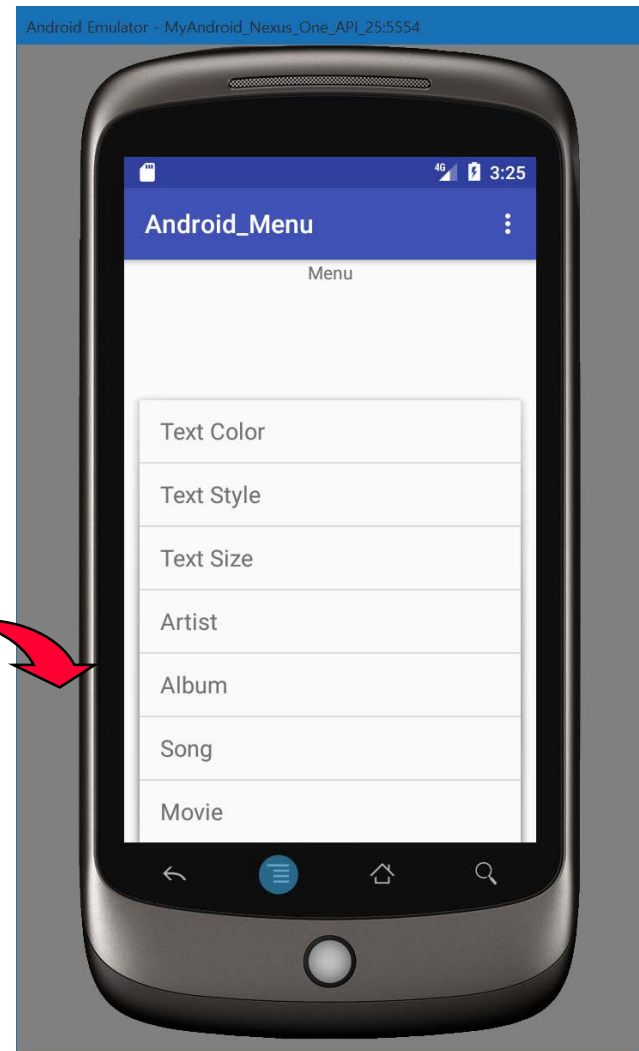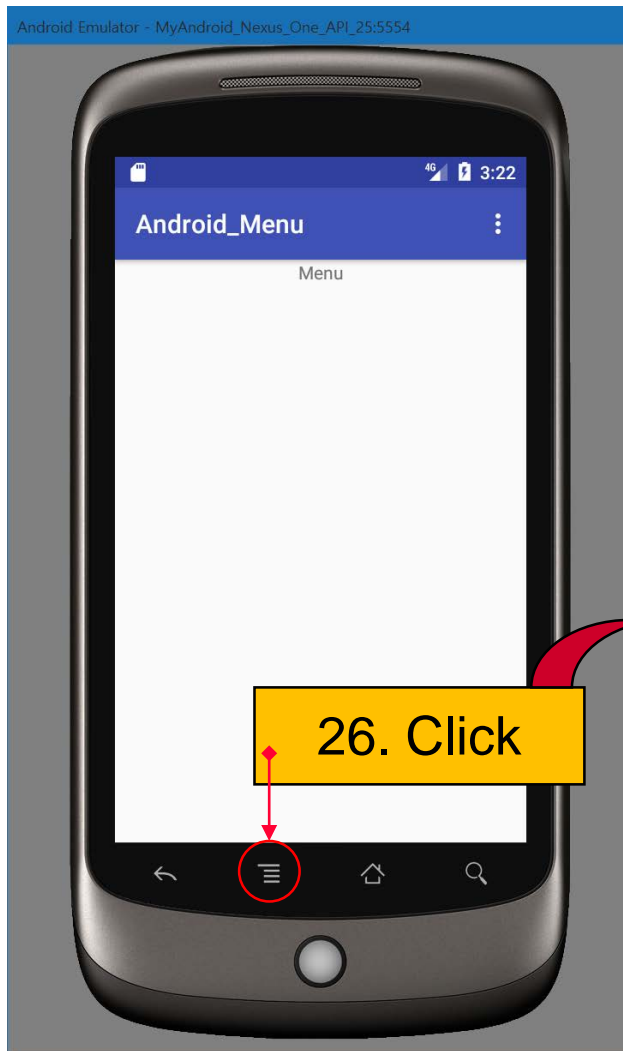
Menu 구현 (18)

❖ **실행 결과**

Menu 구현 (19)

❖ **실행 결과**

◆ Android 2.2 : API Version 7

1. 실행 결과 확인

2. Click

Expanded menu

실습Ⅰ : Text Color 메뉴의 SubMenu 구현

■ Android_Menu (실습 시간 : 30분)

❖ 아래 그림과 같이 Text Color 메뉴의 SubMenu와 Menu Item Event Handler를 구현하시오.

◆ SubMenu 구현

◆ SubMenu Item Click Event Handler 구현

실습 I : Text Color 메뉴의 SubMenu 구현 (1)

■ SubMenu 구현

❖ Group No 지정

❖ Text Color Item No 지정

```java
package com.inhatc.lee_won_joo.android_menu;

import ...

public class MainActivity extends AppCompatActivity {

    // Group No.
    public static final int ID_GROUP_TEXT_COLOR    = 1;
    public static final int ID_GROUP_TEXT_STYLE    = 2;
    public static final int ID_GROUP_TEXT_SIZE     = 3;
    public static final int ID_GROUP_ARTIST        = 4;
    public static final int ID_GROUP_ALBUM         = 5;
    public static final int ID_GROUP_SONG          = 6;
    public static final int ID_GROUP_MOVIE         = 7;
    // Text Color Item No.
    public static final int ID_COLOR_RED           = 11;
    public static final int ID_COLOR_GREEN         = 12;
    public static final int ID_COLOR_BLUE          = 13;

    TextView objTxtView;    //TextView object

    @Override
    protected void onCreate(Bundle savedInstanceState) {...}
```

1. Coding

실습 I : Text Color 메뉴의 SubMenu 구현 (3)

❖ onCreateOptionMenu() Method 구현

2. Coding

```java
/**...*/
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    SubMenu mnuTextColor = menu.addSubMenu("Text Color");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_RED, 1, "Red");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_GREEN, 2, "Green");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_BLUE, 3, "Blue");

    SubMenu mnuTextStyle = menu.addSubMenu("Text Style");
    SubMenu mnuTextSize = menu.addSubMenu("Text Size");

    SubMenu mnuArtist = menu.addSubMenu("Artist");
    mnuArtist.setIcon(R.drawable.artist);

    SubMenu mnuAlbum = menu.addSubMenu("Album");
    mnuAlbum.setIcon(R.drawable.album);

    SubMenu mnuSong = menu.addSubMenu("Song");
    mnuSong.setIcon(R.drawable.song);

    SubMenu mnuMovie = menu.addSubMenu("Movie");

    return super.onCreateOptionsMenu(menu);
}
```

실습 I : Text Color 메뉴의 SubMenu 구현 (4)

❖ Method 추가

실습 I : Text Color 메뉴의 SubMenu 구현 (5)

❖ onOptionsItemSlected() Method 구현

  ◆ Text Color > RED

  ◆ Text Color > GREEN

  ◆ Text Color > BLUE

MainActivity.java ×

```java
/**...*/
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case ID_COLOR_RED:
            objTxtView.setTextColor(Color.RED);
            return true;
        case ID_COLOR_GREEN:
            objTxtView.setTextColor(Color.GREEN);
            return true;
        case ID_COLOR_BLUE:
            objTxtView.setTextColor(Color.BLUE);
            return true;
    }
    return super.onOptionsItemSelected(item);
}
}
```

6. Coding
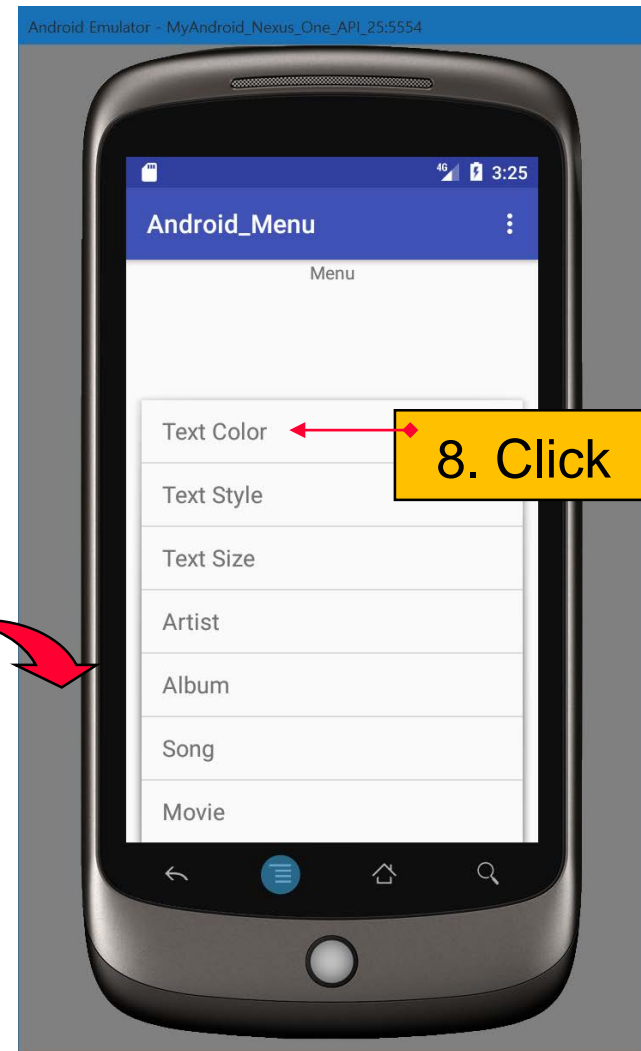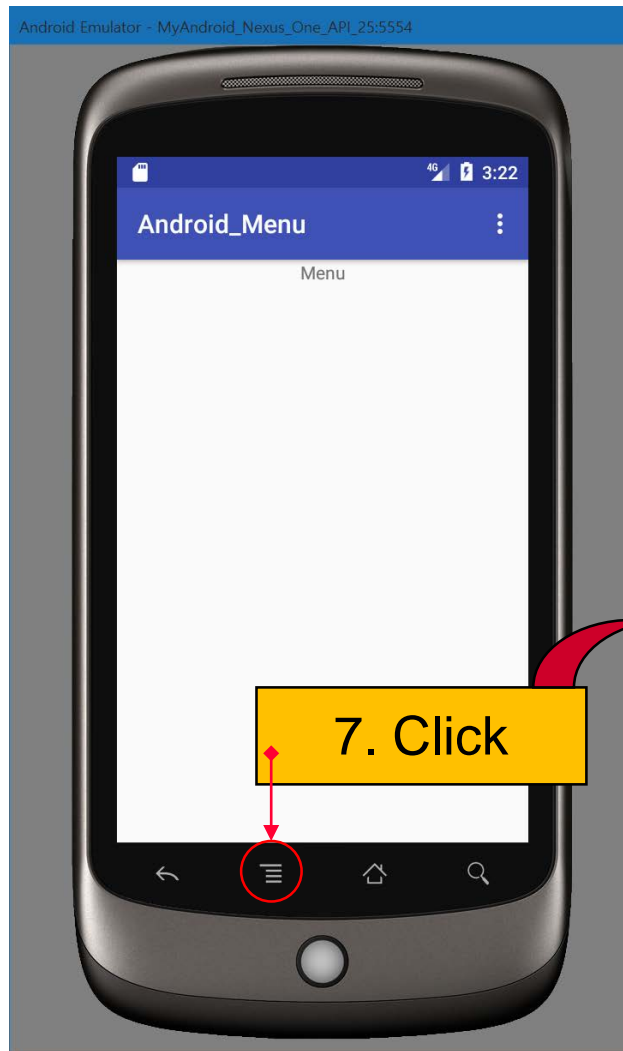
❖ 실행 결과

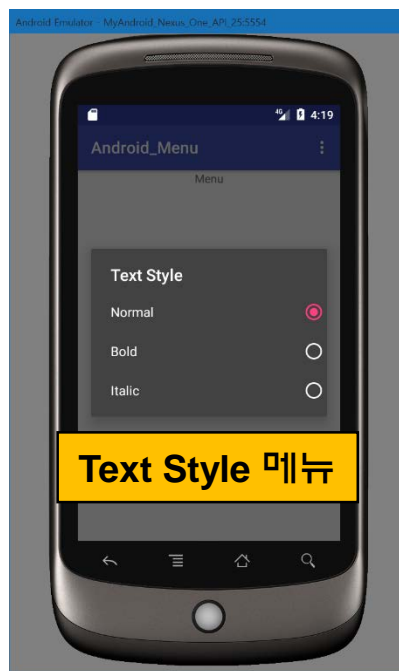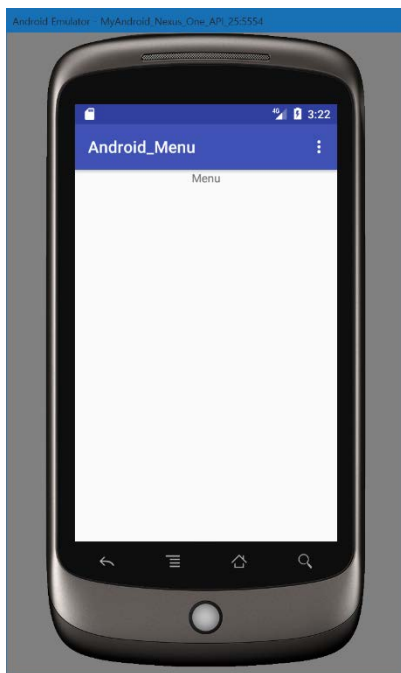# 실습 I : Text Color 메뉴의 SubMenu 구현 (7)

❖ 실행 결과

9. Click

10. 결과 확인
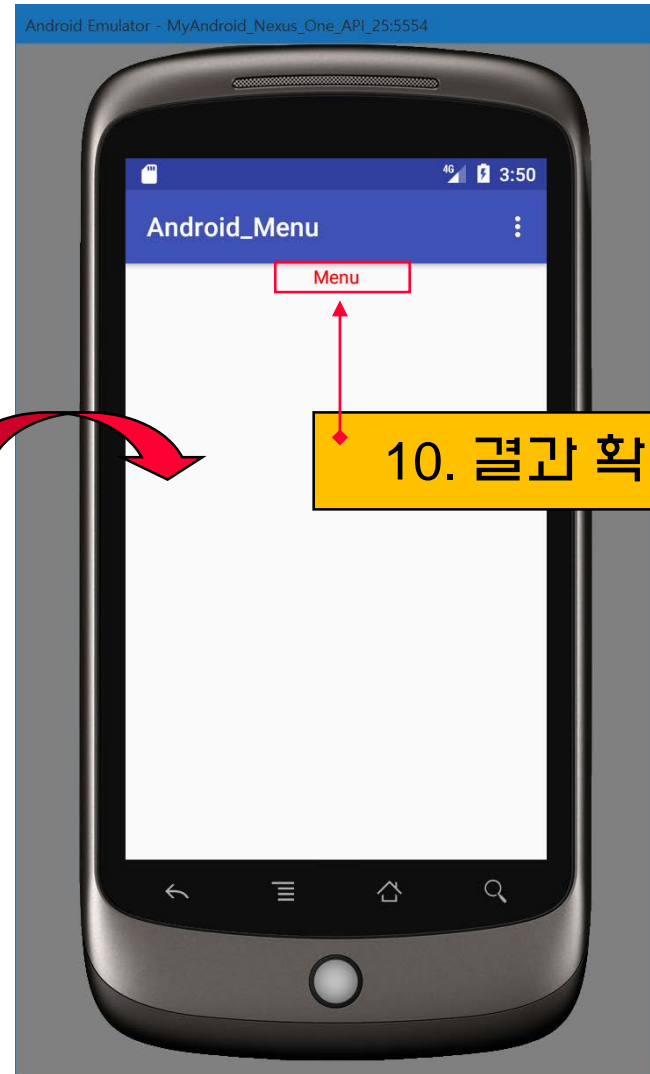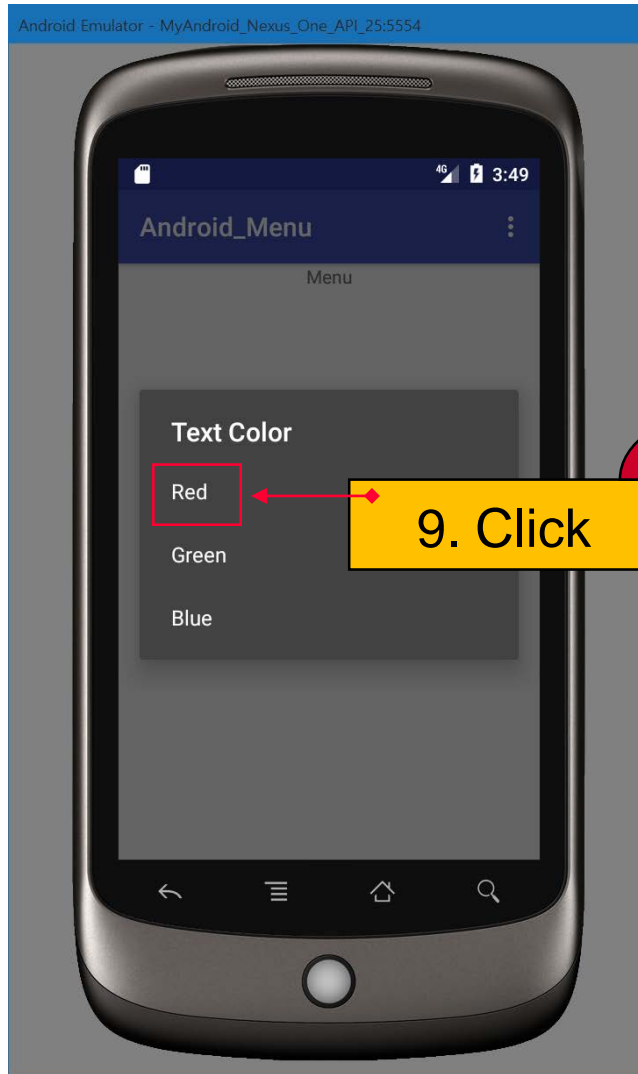
실습 II : Text Style/ Text Size 메뉴의 SubMenu 구현

■ Android_Menu (실습 시간 : 30분)

❖ 아래 그림과 Text Style / Text Size 메뉴의 SubMenu와 Menu Item Event Handler를 구현하시오.

◆ SubMenu 구현

◆ SubMenu Item Click Event Handler 구현

실습 II : Text Style/ Text Size 메뉴의 SubMenu 구현 (1)

■ SubMenu 구현

❖ Text Style Item No / Text Size Item No 지정

```java
12  public class MainActivity extends AppCompatActivity {
13
14      // Group No.
15      public static final int ID_GROUP_TEXT_COLOR    = 1;
16      public static final int ID_GROUP_TEXT_STYLE    = 2;
17      public static final int ID_GROUP_TEXT_SIZE     = 3;
18      public static final int ID_GROUP_ARTIST        = 4;
19      public static final int ID_GROUP_ALBUM         = 5;
20      public static final int ID_GROUP_SONG          = 6;
21      public static final int ID_GROUP_MOVIE         = 7;
22
23      // Text Color Item No.
24      public static final int ID_COLOR_RED           = 11;
25      public static final int ID_COLOR_GREEN         = 12;
26      public static final int ID_COLOR_BLUE          = 13;
27
28      // Text Style Item No.
29      public static final int ID_TEXT_NORMAL         = 21;
30                              ❶
31
32
33      // Text Size Item No.
34      public static final int ID_TEXTSIZE_10P        = 31;
35                              ❷
36
37
38      TextView objTxtView;    //TextView object
39
```

1. Coding

실습 II : Text Style/ Text Size 메뉴의 SubMenu 구현 (2)

❖ onCreateOptionMenu() Method 구현

```java
/**...*/
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    SubMenu mnuTextColor = menu.addSubMenu("Text Color");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_RED, 1, "Red");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_GREEN, 2, "Green");
    mnuTextColor.add(ID_GROUP_TEXT_COLOR, ID_COLOR_BLUE, 3, "Blue");

    SubMenu mnuTextStyle = menu.addSubMenu("Text Style");
    mnuTextStyle.add(ID_GROUP_TEXT_STYLE, ID_TEXT_NORMAL, 1, "Normal").setChecked(true);

                                    ❸


    SubMenu mnuTextSize = menu.addSubMenu("Text Size");
    mnuTextSize.add(ID_GROUP_TEXT_SIZE, ID_TEXTSIZE_10P, 1, "10 Pt");

                                    ❹


    SubMenu mnuArtist = menu.addSubMenu("Artist");
    mnuArtist.setIcon(R.drawable.artist);

    SubMenu mnuAlbum = menu.addSubMenu("Album");
    mnuAlbum.setIcon(R.drawable.album);

    SubMenu mnuSong = menu.addSubMenu("Song");
    mnuSong.setIcon(R.drawable.song);

    SubMenu mnuMovie = menu.addSubMenu("Movie");

    return super.onCreateOptionsMenu(menu);
}
```

2. Coding

❖ onOptionsItemSelected() Method 구현

◆ Text Style

- Normal
- Bold
- Italic

◆ Text Size

- 10 Pt
- 18 Pt
- 24 Pt

MainActivity.java ×

```java
149    public boolean onOptionsItemSelected(MenuItem item) {
150        switch (item.getItemId()) {
151            case ID_COLOR_RED:
152                objTxtView.setTextColor(Color.RED);
153                return true;
154            case ID_COLOR_GREEN:
155                objTxtView.setTextColor(Color.GREEN);
156                return true;
157            case ID_COLOR_BLUE:
158                objTxtView.setTextColor(Color.BLUE);
159                return true;
160            case ID_TEXT_NORMAL:
161                objTxtView.setTypeface(Typeface.DEFAULT, Typeface.NORMAL);
162                item.setChecked(true);
163                return true;
164            case ID_TEXT_BOLD:
165
166                                          ❺
167                return true;
168            case ID_TEXT_ITALIC:
169                objTxtView.setTypeface(Typeface.DEFAULT, Typeface.ITALIC);
170                item.setChecked(true);
171                return true;
172            case ID_TEXTSIZE_10P:
173                objTxtView.setTextSize(10);
174                return true;
175            case ID_TEXTSIZE_18P:
176                                          ❻
177                return true;
178            case ID_TEXTSIZE_24P:
179                objTxtView.setTextSize(24);
180                return true;
181        }
182        return super.onOptionsItemSelected(item);
```
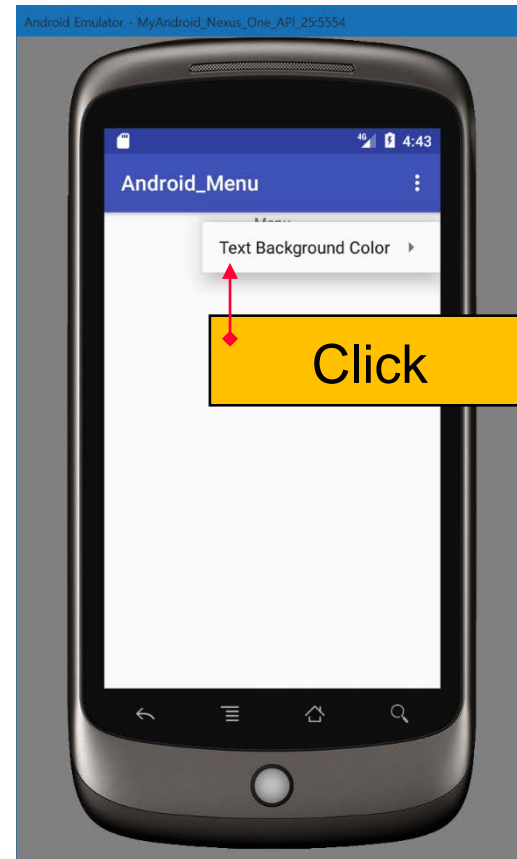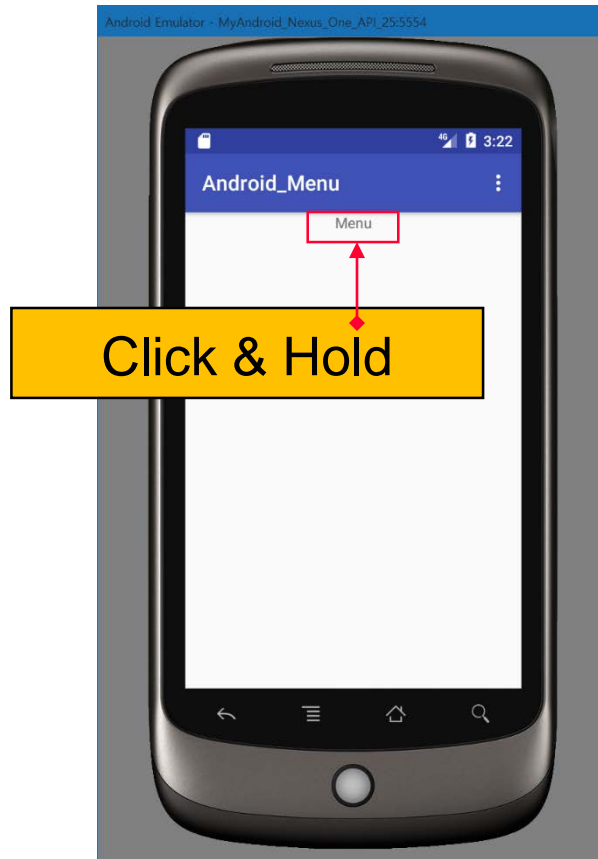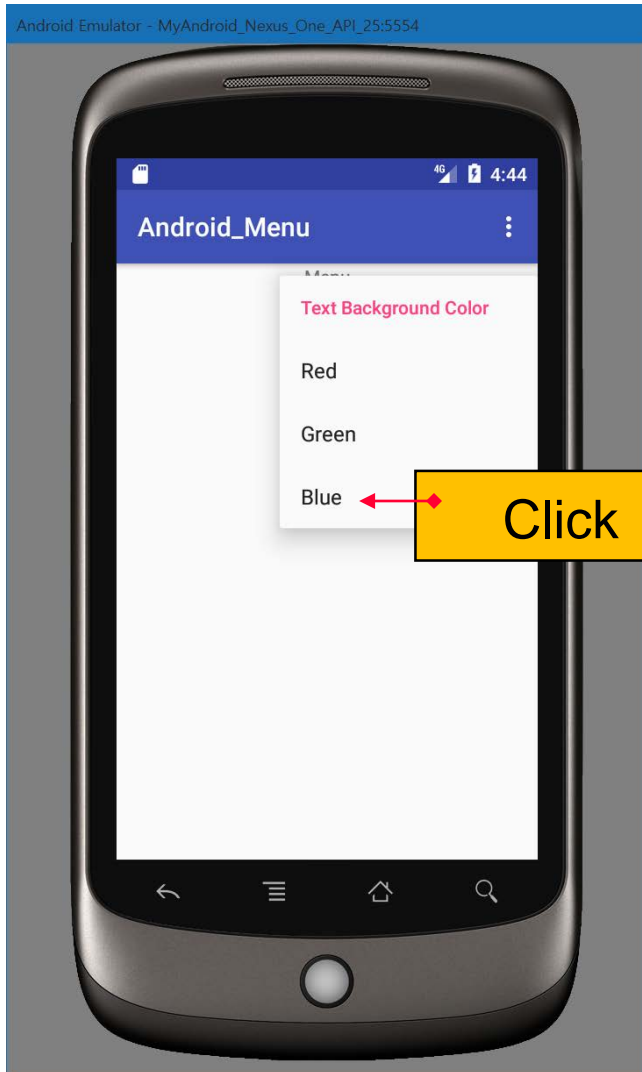
3. Coding

실습 III : Context Menu 구현 (1)

■ Android_Menu (실습 시간 : 30분)

❖ 아래 그림과 같이 Text 배경색을 지정하는 Context Menu를 구현하시오.

Click & Hold

Click

실습 III : Context Menu 구현 (2)

실습 III : Context Menu 구현 (3)

❖ onCreateContextMenu() method 추가

실습 III : Context Menu 구현 (4)

❖ onCreateContextMenu() method 구현

◆ Text 배경색

- RED, GREEN, BLUE

```
MainActivity.java ×

42          @Override
43          protected void onCreate(Bundle savedInstanceState) {...}
53
54          /**...*/
80          @Override
81          public boolean onCreateOptionsMenu(Menu menu) {...}
111
112         /**...*/
128         @Override
129         public boolean onPrepareOptionsMenu(Menu menu) {...}
133
134         /**...*/
150         @Override
151         public boolean onOptionsItemSelected(MenuItem item) {...}
186
187         /**...*/
203         @Override
204         public void onCreateContextMenu(ContextMenu menu, View v,
205                                         ContextMenu.ContextMenuInfo menuInfo) {
206
207             SubMenu mnuTextBackGroundColor = menu.addSubMenu("Text Background Color");
208             mnuTextBackGroundColor.add(Menu.NONE, ID_COLOR_RED, Menu.NONE, "Red");
209
210                                        ❶
211
212             super.onCreateContextMenu(menu, v, menuInfo);
213         }
214     }
```

4. Coding

실습 III : Context Menu 구현 (5)

❖ onContextItemSelected() method 추가

실습 III : Context Menu 구현 (6)

❖ onContextItemSelected() Method 구현

◆ Text 배경색

- RED, GREEN, BLUE

```java
MainActivity.java ×

214
215    /**...*/
232    @Override
233    public boolean onContextItemSelected(MenuItem item) {
234
235        switch (item.getItemId()) {
236            case ID_COLOR_RED:
237                objTxtView.setBackgroundColor(Color.RED);
238                return true;
239            case ID_COLOR_GREEN:
240                                              ❷
241                return true;
242            case ID_COLOR_BLUE:
243                                              ❸
244                return true;
245        }
246
247        return super.onContextItemSelected(item);
248    }
249 }
250
```

8. Coding

학습 요약

■ Menu

■ Options Menu

❖ Icon Menu

❖ Expanded Menu

■ Context Menu