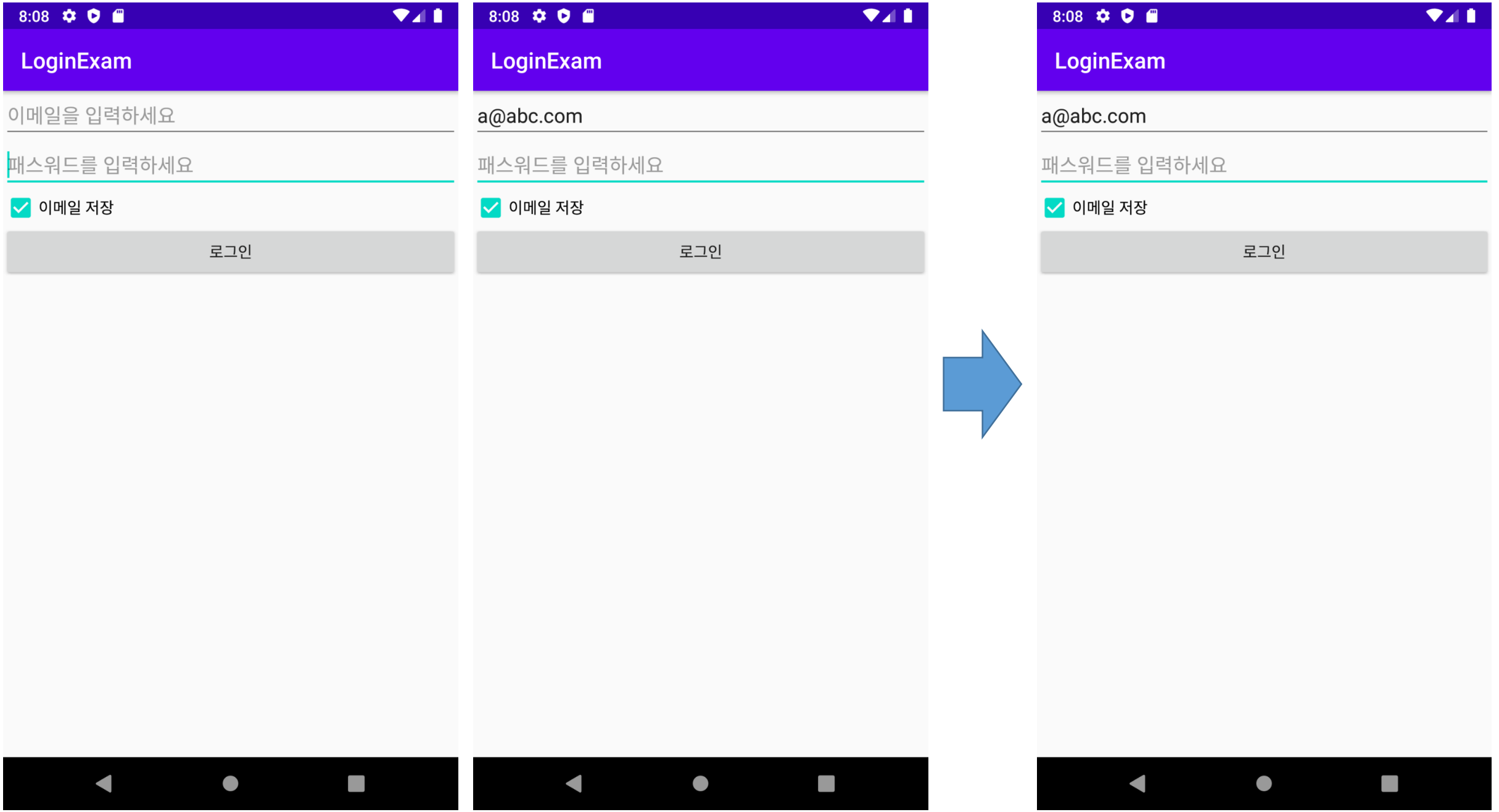
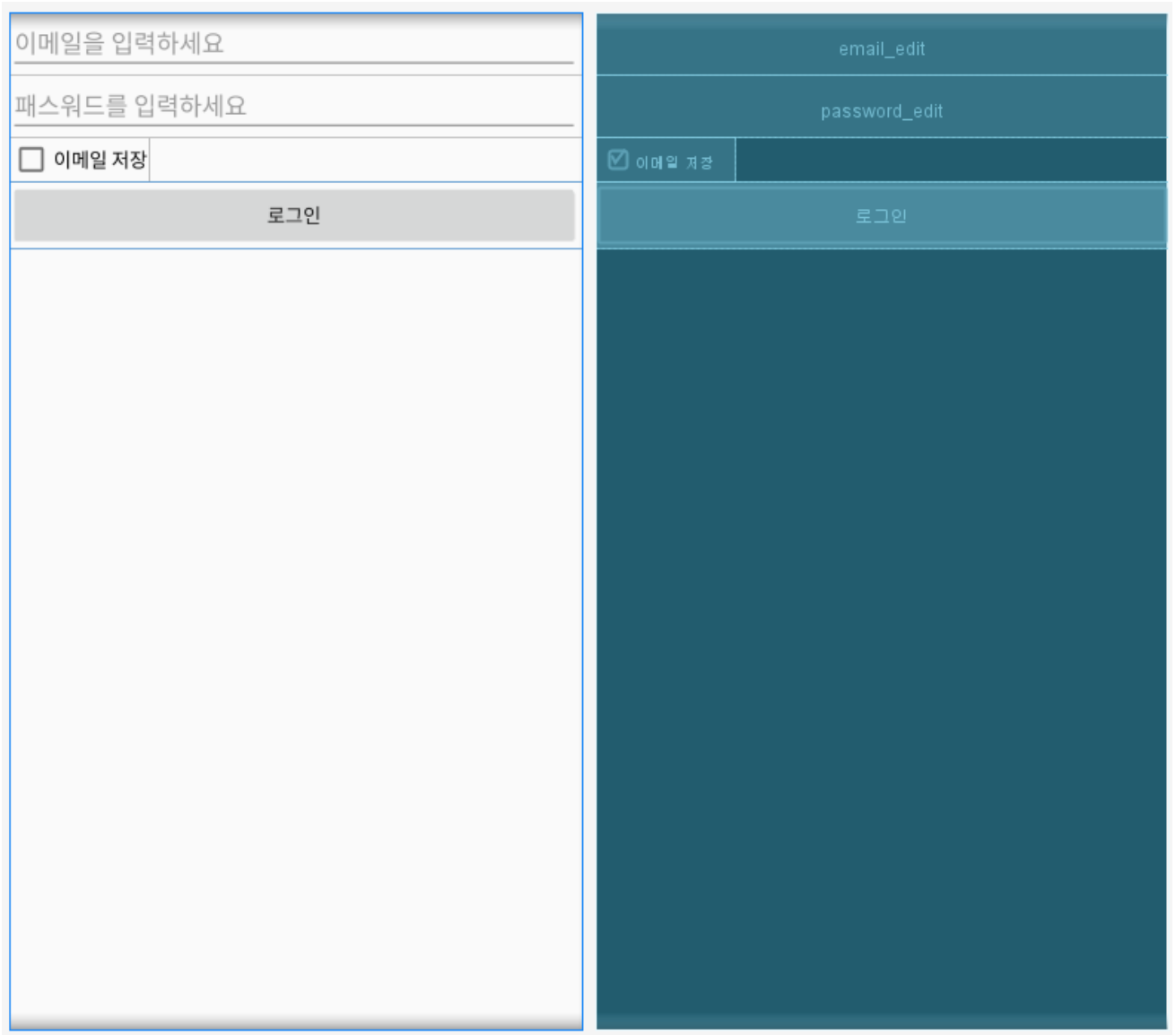
08

데이터 저장하기

데이터 저장하기


8:08
LoginExam
이메일을 입력하세요
패스워드를 입력하세요
이메일 저장
로그인
8:08
LoginExam
a@abc.com
패스워드를 입력하세요
이메일 저장
로그인
8:08
LoginExam
a@abc.com
패스워드를 입력하세요
이메일 저장
로그인

```xml
<?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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/email_edit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="이메일을 입력하세요"
        android:inputType="textEmailAddress" />

    <EditText
        android:id="@+id/password_edit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="패스워드를 입력하세요"
        android:inputType="textPassword" />

    <CheckBox
        android:id="@+id/save_check"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="이메일 저장" />

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="로그인" />

</LinearLayout>
```



onDestory()

- **액티비티가 종료될때 호출되는 콜백 메서드**
  - 메서드를 재정의 하면 액티비티가 종료될때 필요한 처리를 할 수 있음

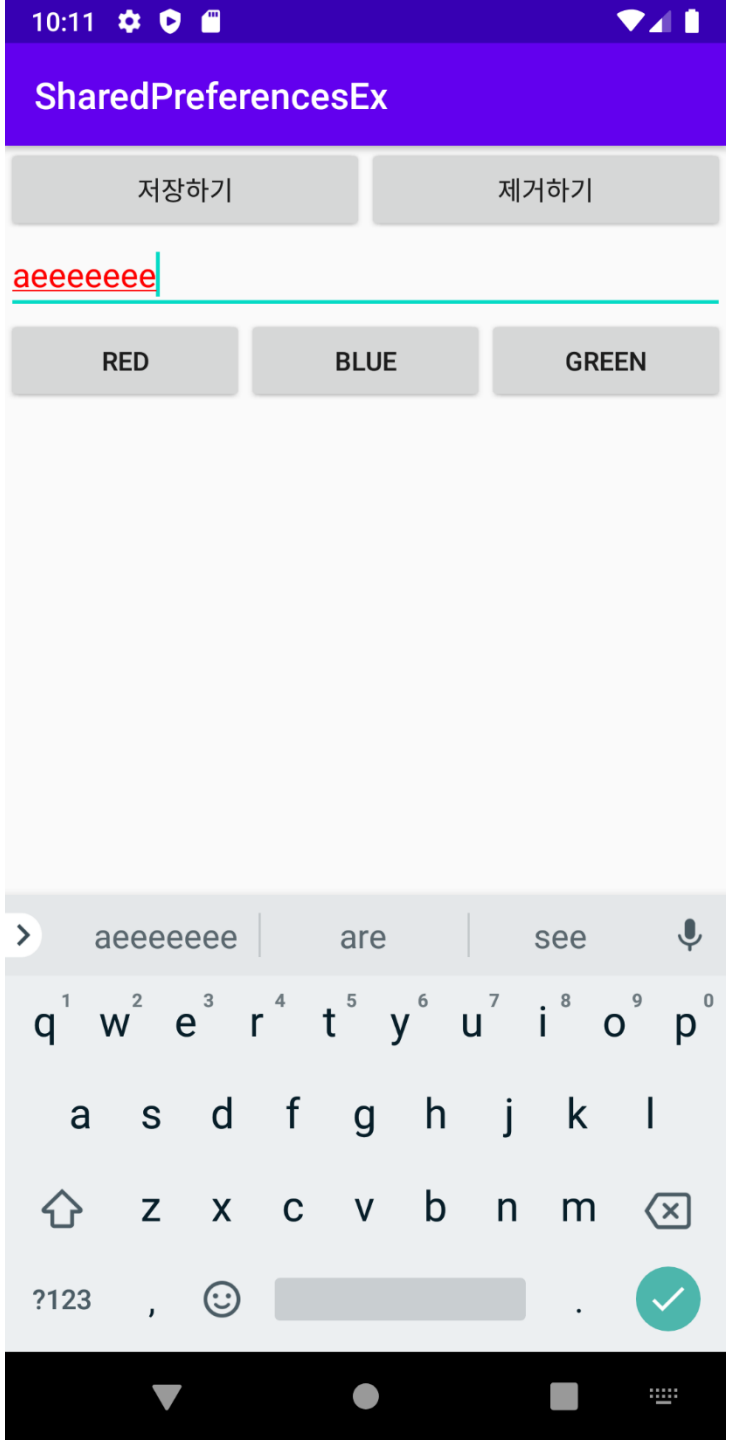
MainActivity.java

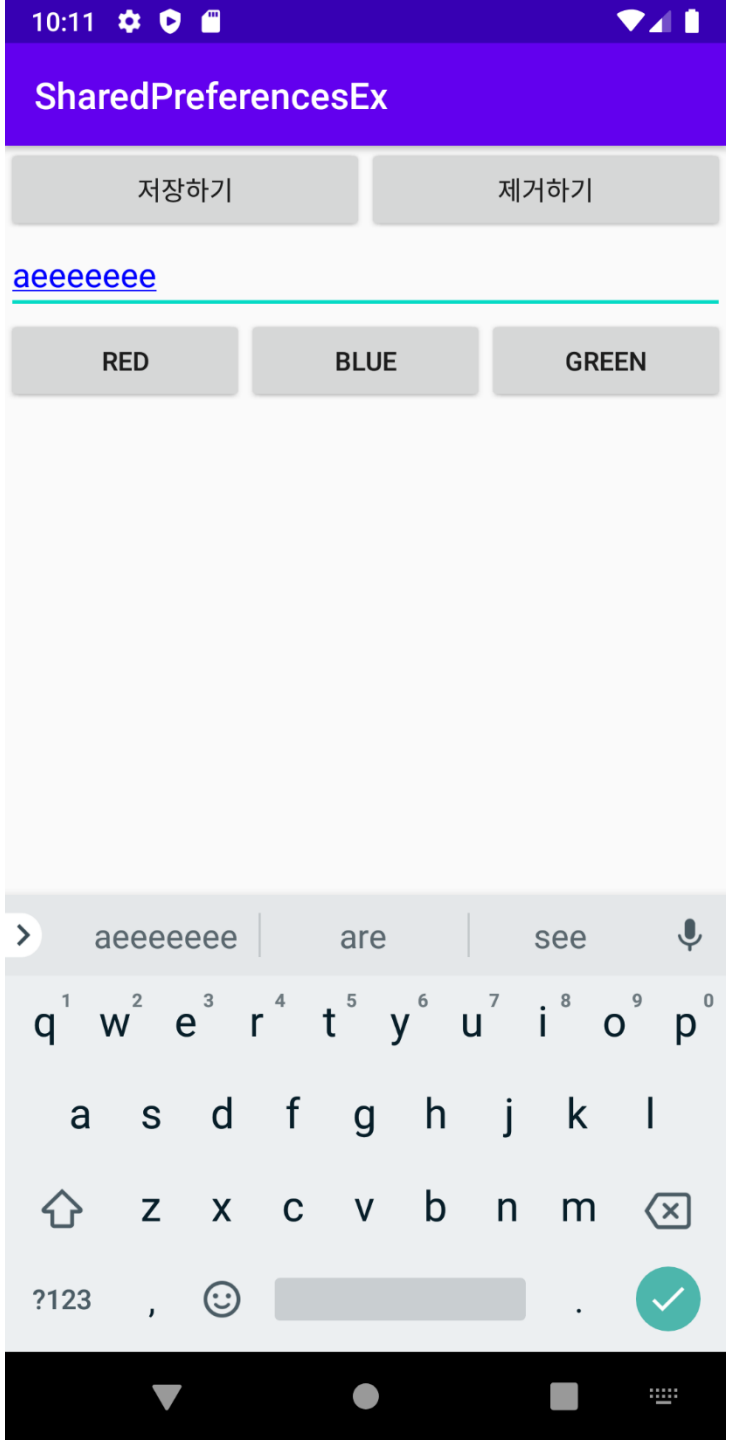

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onDestroy() {
        super.onDestroy();

        // SharedPreferences의 수정 가능한 객체 얻기
        SharedPreferences.Editor editor = mPreferences.edit();
        // 저장할 데이터
        editor.putBoolean("save", mSaveCheckBox.isChecked());
        editor.putString("email", mEmailEditText.getText().toString());
        // 저장
         editor.apply();
    }
}
```

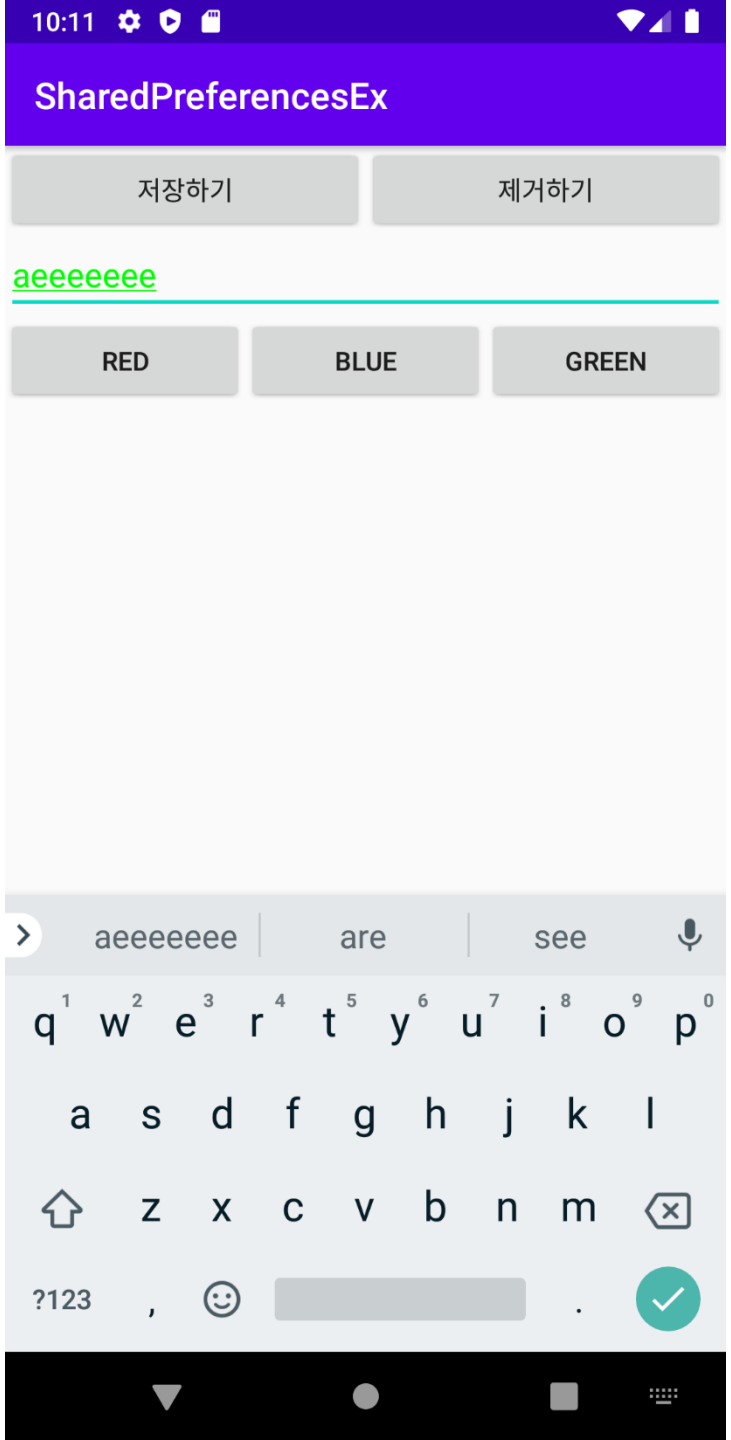
MainActivity.java

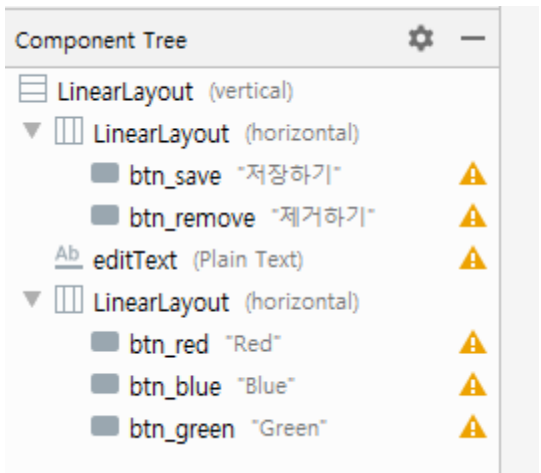

```
public class MainActivity extends AppCompatActivity {

    private EditText mEmailEditText;
    private CheckBox mSaveCheckBox;

    // 설정 정보 저장 객체
     private SharedPreferences mPreferences;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mEmailEditText = (EditText) findViewById(R.id.email_edit);
        mSaveCheckBox = (CheckBox) findViewById(R.id.save_check);

        // Preference 객체 초기화
         mPreferences = PreferenceManager.getDefaultSharedPreferences(this);

        // 저장된 이메일을 불러와서 복원
         Boolean isChecked = mPreferences.getBoolean("save", false);
        mSaveCheckBox.setChecked(isChecked);
        if (isChecked) {
            String email = mPreferences.getString("email", "");
            mEmailEditText.setText(email);
        }
    }
}
```

```java
public class MainActivity extends AppCompatActivity {
    private EditText mEmailEditText;
    private CheckBox mSaveCheckBox;

    // 설정 정보 저장 객체
     private SharedPreferences mPreferences;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mEmailEditText = (EditText) findViewById(R.id.email_edit);
        mSaveCheckBox = (CheckBox) findViewById(R.id.save_check);

        // Preference 객체 초기화
         mPreferences = PreferenceManager.getDefaultSharedPreferences(this);

        // 저장된 이메일을 불러와서 복원
         Boolean isChecked = mPreferences.getBoolean("save", false);
        mSaveCheckBox.setChecked(isChecked);
        if (isChecked) {
            String email = mPreferences.getString("email", "");
            mEmailEditText.setText(email);
        }
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();

        // SharedPreferences의 수정 가능한 객체 얻기
         SharedPreferences.Editor editor = mPreferences.edit();
        // 저장할 데이터
         editor.putBoolean("save", mSaveCheckBox.isChecked());
        editor.putString("email", mEmailEditText.getText().toString());
        // 저장
         editor.apply();
    }
}
```


10:11
SharedPreferencesEx
저장하기
제거하기
aeeeeeee
RED
BLUE
GREEN
aeeeeeee
are
see


10:11
SharedPreferencesEx
저장하기
제거하기
aeeeeeee
RED
BLUE
GREEN
aeeeeeee
are
see


10:11
SharedPreferencesEx
저장하기
제거하기
aeeeeeee
RED
BLUE
GREEN
aeeeeeee
are
see


Component Tree
LinearLayout (vertical)
LinearLayout (horizontal)
btn_save "저장하기"
btn_remove "제거하기"
editText (Plain Text)
LinearLayout (horizontal)
btn_red "Red"
btn_blue "Blue"
btn_green "Green"


저장하기
제거하기
Text를 입력하세요
RED
BLUE
GREEN
저장하기
제거하기
editText
RED
BLUE
GREEN

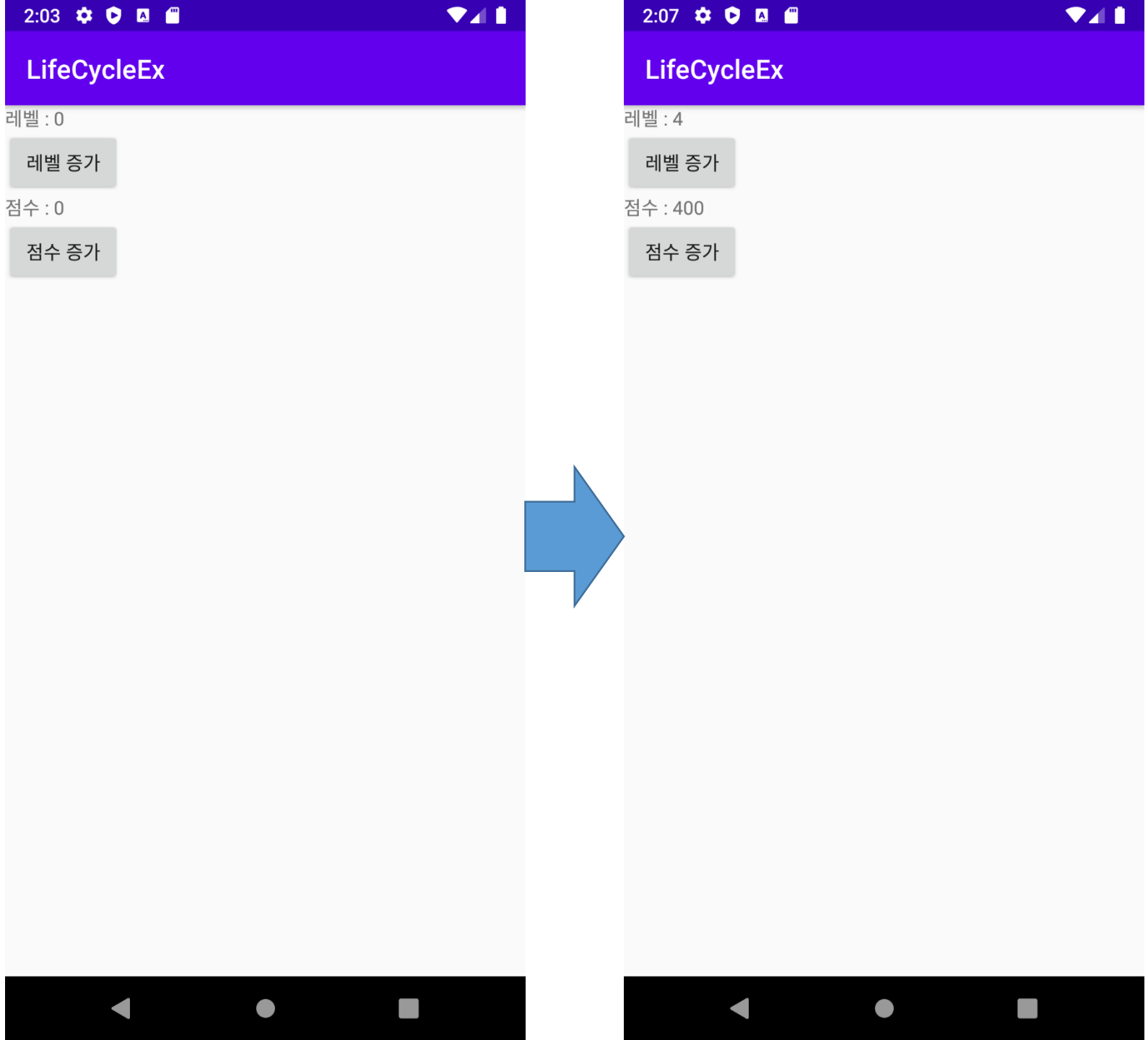
```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/btn_save"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="저장하기" />

        <Button
            android:id="@+id/btn_remove"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="제거하기" />
    </LinearLayout>

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Text를 입력하세요"
        android:inputType="textPersonName" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/btn_red"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Red" />

        <Button
            android:id="@+id/btn_blue"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Blue" />

        <Button
            android:id="@+id/btn_green"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Green" />
    </LinearLayout>

</LinearLayout>
```

```java
public class MainActivity extends AppCompatActivity {

    private SharedPreferences preferences;
    private SharedPreferences.Editor editor;
    private int SelectedColor;
    EditText editText;
    Button btn_red,btn_green,btn_blue,btn_save,btn_remove;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        editText = findViewById(R.id.editText);
        btn_red = findViewById(R.id.btn_red);
        btn_blue = findViewById(R.id.btn_blue);
        btn_green = findViewById(R.id.btn_green);
        btn_save = findViewById(R.id.btn_save);
        btn_remove = findViewById(R.id.btn_remove);

        setListenerColorbtn();
        setListenerPreferencebtn();

        preferences = PreferenceManager.getDefaultSharedPreferences(this);
        editor = preferences.edit();

        initializeValue();

    }
}
```

```
public class MainActivity extends AppCompatActivity {

    public void setListenerColorbtn()  {
        View.OnClickListener Listener = new View.OnClickListener(){
            @Override
            public void onClick(View view)
            {
                switch(view.getId())
                {
                    case R.id.btn_red:
                        SelectedColor = Color.RED;
                        editText.setTextColor(Color.RED);
                        break;
                    case R.id.btn_blue:
                        SelectedColor = Color.BLUE;
                        editText.setTextColor(Color.BLUE);
                        break;
                    case R.id.btn_green:
                        SelectedColor = Color.GREEN;
                        editText.setTextColor(Color.GREEN);
                        break;
                }
            }
        };

        btn_red.setOnClickListener(Listener);
        btn_blue.setOnClickListener(Listener);
        btn_green.setOnClickListener(Listener);

    }
}
```

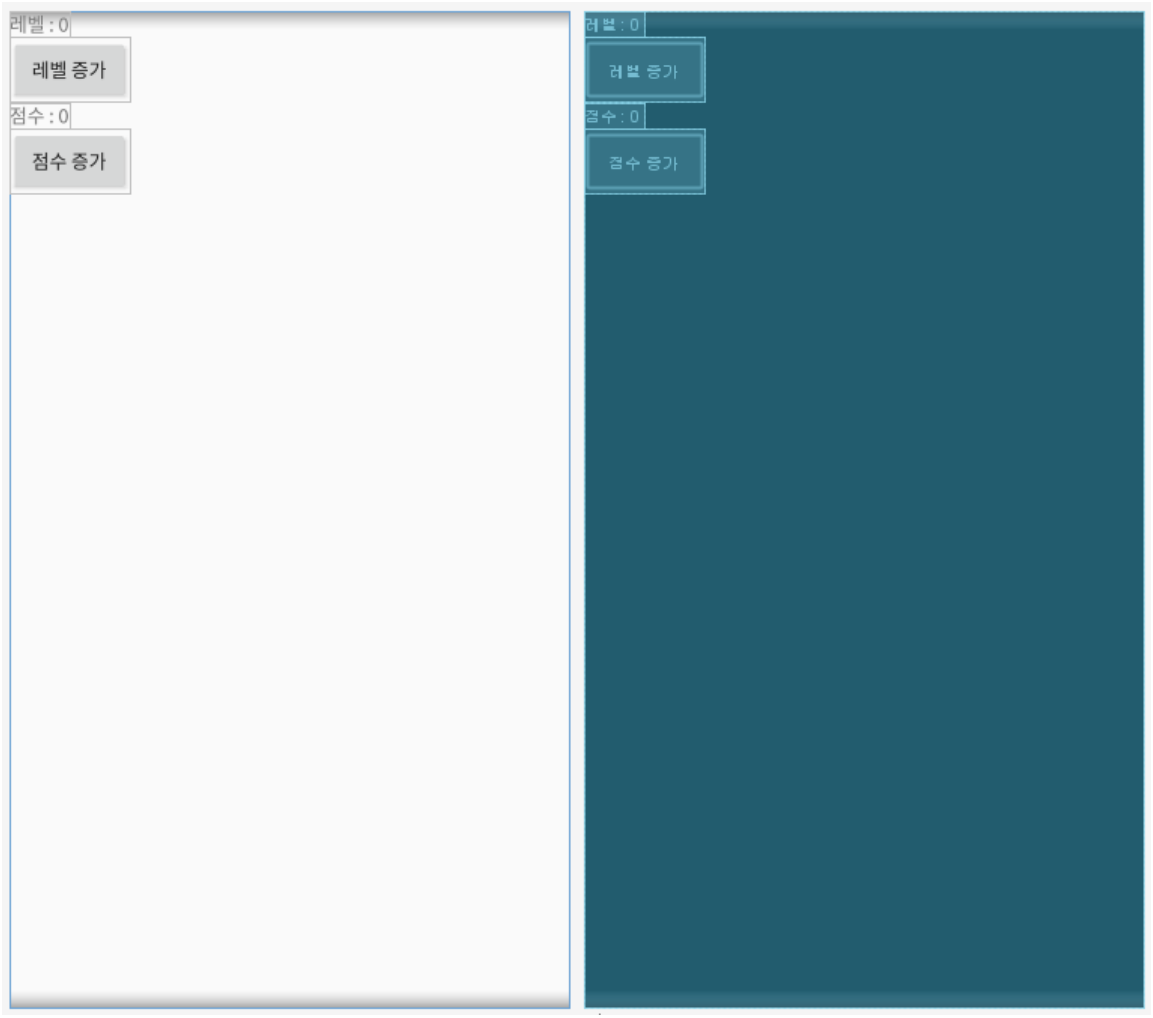
```
public class MainActivity extends AppCompatActivity {
    public void setListenerPreferencebtn() {
        View.OnClickListener Listener = new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                switch (view.getId()) {
                    //데이터 저장하기
                      case R.id.btn_save:
                        editor.putInt("color", SelectedColor);
                        editor.putString("text", editText.getText().toString());
                        editor.apply();
                        break;
                    //데이터 제거하기
                      case R.id.btn_remove:
                        editor.remove("color");
                        editor.remove("text");
                        editor.apply();
                        break;
                }
            }
        };
        btn_save.setOnClickListener(Listener);
        btn_remove.setOnClickListener(Listener);
    }

    public void initializeValue()
    {
        editText.setText(preferences.getString("text","저장된 데이터가 없어요"));
        editText.setTextColor(preferences.getInt("color", Color.BLACK));
    }
}
```

회전시 데이터 유지하기


2:03
LifeCycleEx
레벨 : 0
레벨 증가
점수 : 0
점수 증가
2:07
LifeCycleEx
레벨 : 4
레벨 증가
점수 : 400
점수 증가

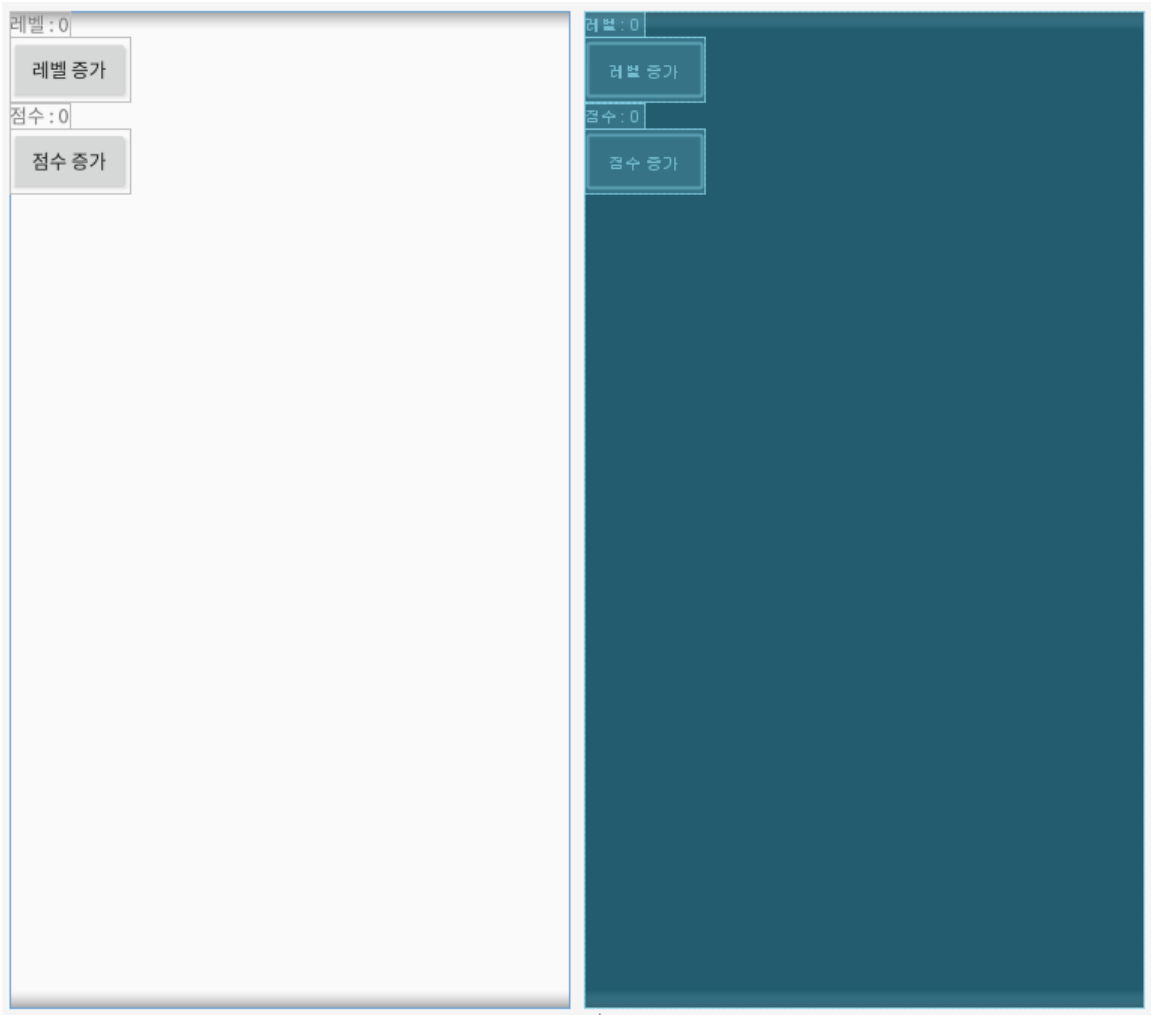
activity_main.xml


```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/text_level"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="레벨 : 0" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onLevelUp"
        android:text="레벨 증가" />

    <TextView
        android:id="@+id/text_score"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="점수 : 0" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onScoreUp"
        android:text="점수 증가" />
</LinearLayout>
```



activity_main.xml


```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/text_level"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="레벨 : 0" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onLevelUp"
        android:text="레벨 증가" />

    <TextView
        android:id="@+id/text_score"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="점수 : 0" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onScoreUp"
        android:text="점수 증가" />
</LinearLayout>
```



MainActivity.java


```
public class MainActivity extends AppCompatActivity {
    TextView text_level;
    TextView text_score;
    int mLevel = 0;
    int mScore = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        text_level = findViewById(R.id.text_level);
        text_score = findViewById(R.id.text_score);
    }

    public void onLevelUp(View view) {
        mLevel++;
        text_level.setText("레벨 : " + mLevel);
    }

    public void onScoreUp(View view) {
        mScore += 100;
        text_score.setText("점수 : " + mScore);
    }
}
```

MainActivity.java


```
public class MainActivity extends AppCompatActivity {
    public static final String STATE_SCORE = "playerScore";
    public static final String STATE_LEVEL = "playLevel";

    int mLevel = 0;
    int mScore = 0;

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

    @Override
    protected void onSaveInstanceState(@NonNull Bundle outState) {
        // 상태 저장
        outState.putInt(STATE_SCORE, mScore);
        outState.putInt(STATE_LEVEL, mLevel);

        super.onSaveInstanceState(outState);
    }
}
```

```
public class MainActivity extends AppCompatActivity {
    public static final String STATE_SCORE = "playerScore";
    public static final String STATE_LEVEL = "playLevel";

    ...

    @Override
    protected void onSaveInstanceState(@NonNull Bundle outState) {
        // 상태 저장
        outState.putInt(STATE_SCORE, mScore);
        outState.putInt(STATE_LEVEL, mLevel);

        super.onSaveInstanceState(outState);
    }


    ...
}
```

```
51      @Override
52      protected void onSaveInstanceState(@NonNull Bundle outState) {
53          // 상태 저장
54          outState.putInt("playerScore", mScore);
55          outState.putInt("playLevel", mLevel);
56
57          super.onSaveInstanceState(outState);
58      }
```

상수값을 public static final로 추출

Ctrl + Alt + C

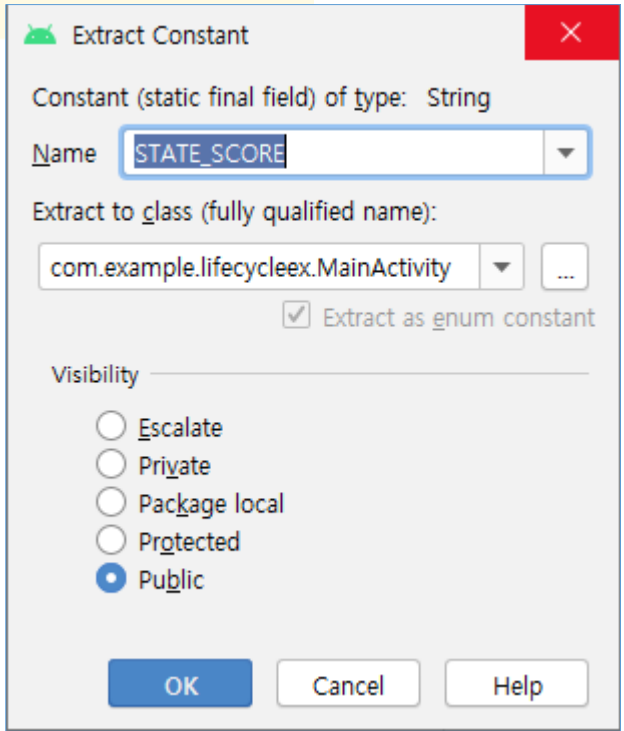
```
public static final String PLAYER_SCORE1 = PLAYER_SCORE;
Move to another class
```

```
56          outState.putInt(PLAYER_SCORE1, mScore);
57          outState.putInt("playLevel", mLevel);
```

```
public static final String STATE_SCORE1 = PLAYER_SCORE;
Move to another class
```

```
56          outState.putInt(STATE_SCORE1, mScore);
57          outState.putInt("playLevel", mLevel);
```

Alt + M
(또는 체크)



MainActivity.java : OnCreate() 메서드에서 복원

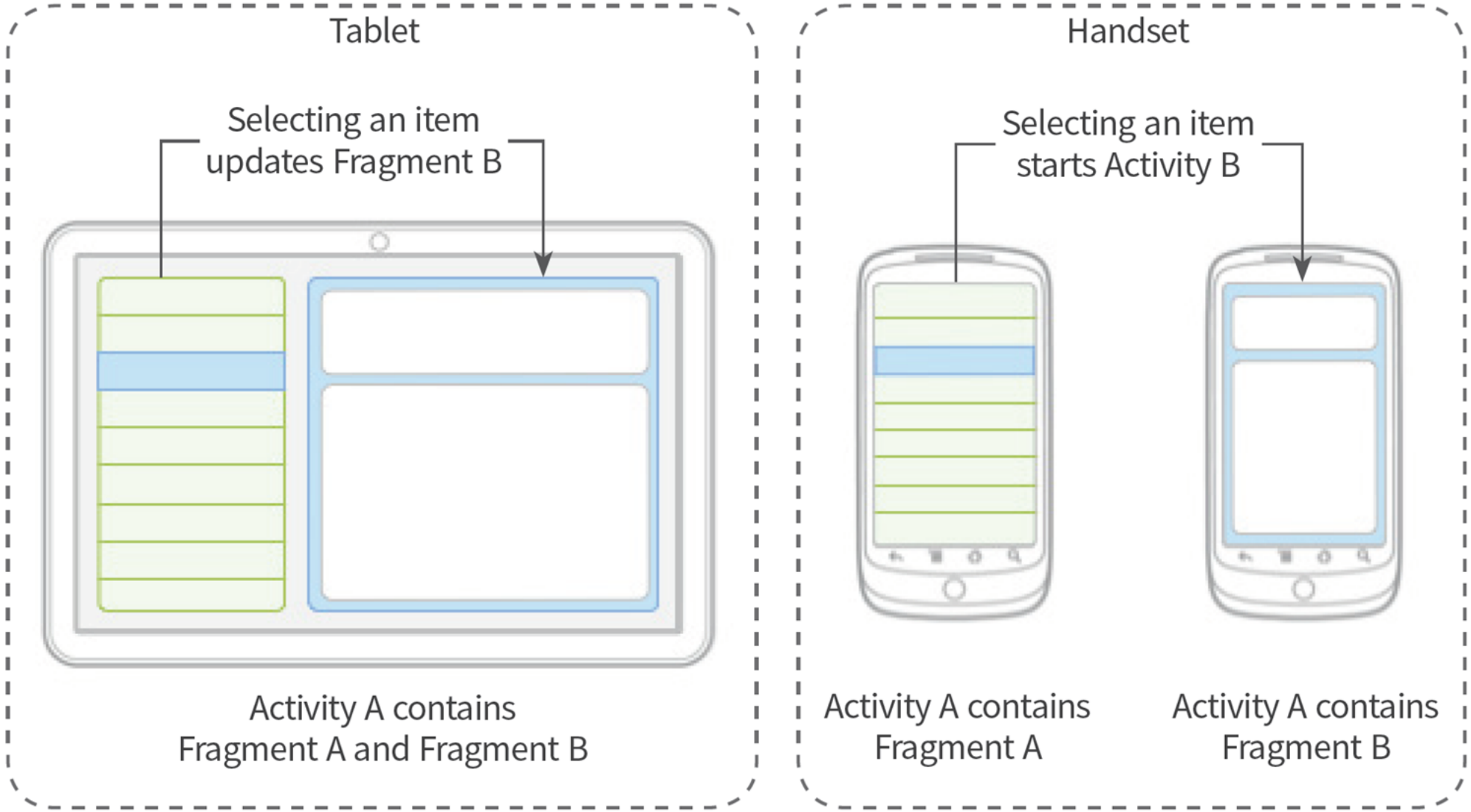

```
public class MainActivity extends AppCompatActivity {
    public static final String STATE_SCORE = "playerScore";
    public static final String STATE_LEVEL = "playLevel";

    TextView text_level;
    TextView text_score;
    int mLevel = 0;
    int mScore = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        text_level = findViewById(R.id.text_level);
        text_score = findViewById(R.id.text_score);

        if(savedInstanceState == null){
        }
        else{
            mLevel = savedInstanceState.getInt(STATE_LEVEL);
            mScore = savedInstanceState.getInt(STATE_SCORE);
            text_level.setText("레벨: "+mLevel);
            text_score.setText("점수: "+mScore);
        }
    }
}
```

```java
public class MainActivity extends AppCompatActivity {
    public static final String STATE_SCORE = "playerScore";
    public static final String STATE_LEVEL = "playLevel";

    TextView text_level, text_score;
    int mLevel = 0;
    int mScore = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        text_level = findViewById(R.id.text_level);
        text_score = findViewById(R.id.text_score);
    }

     // 방법 #2
    @Override
    protected void onRestoreInstanceState(Bundle savedInstanceState) {
        // EditText 등의 복원을 위해 항상 호출 해야 함
        super.onRestoreInstanceState(savedInstanceState);
        mLevel = savedInstanceState.getInt(STATE_LEVEL);
        mScore = savedInstanceState.getInt(STATE_SCORE);
        text_level.setText("레벨 : " + mLevel);
        text_score.setText("점수 : " + mScore);
    }
}
```

Fragment 예제

프래그먼트(Fragment)

- 프래그먼트는 레이아웃의 재사용성을 높임

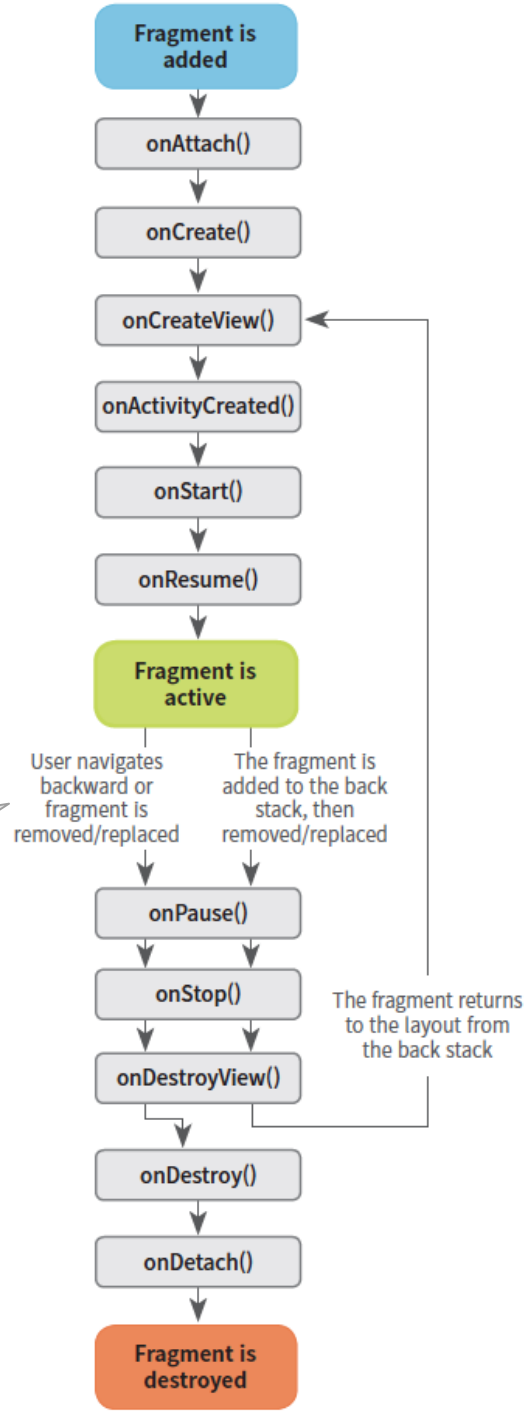


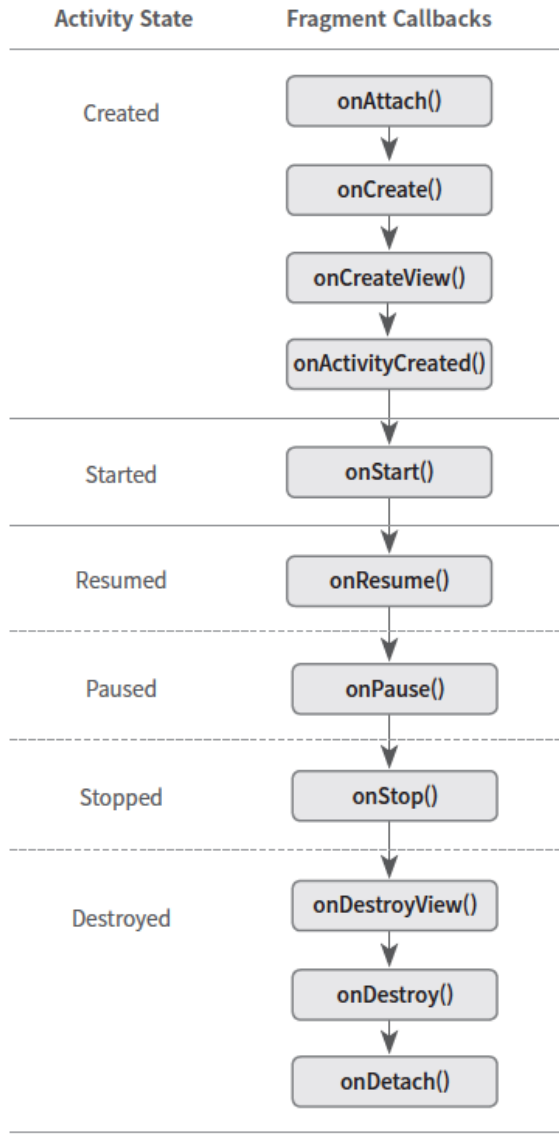
프래그먼트(Fragment)

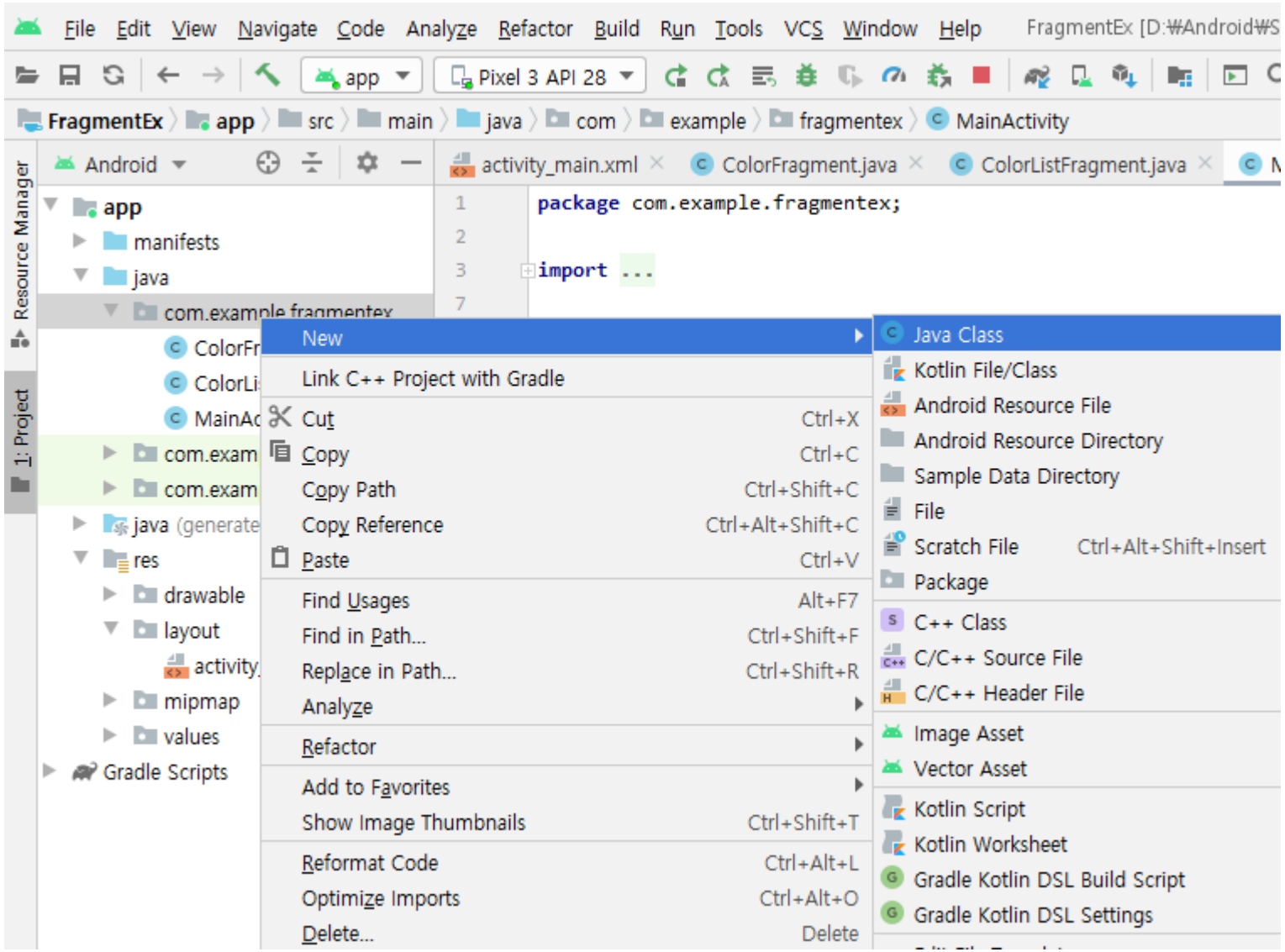
- **프래그먼트와 액티비티의 차이점**

프래그먼트는
생명주기를 가지면서 레이아웃의 집합으로써
재사용이 가능하다

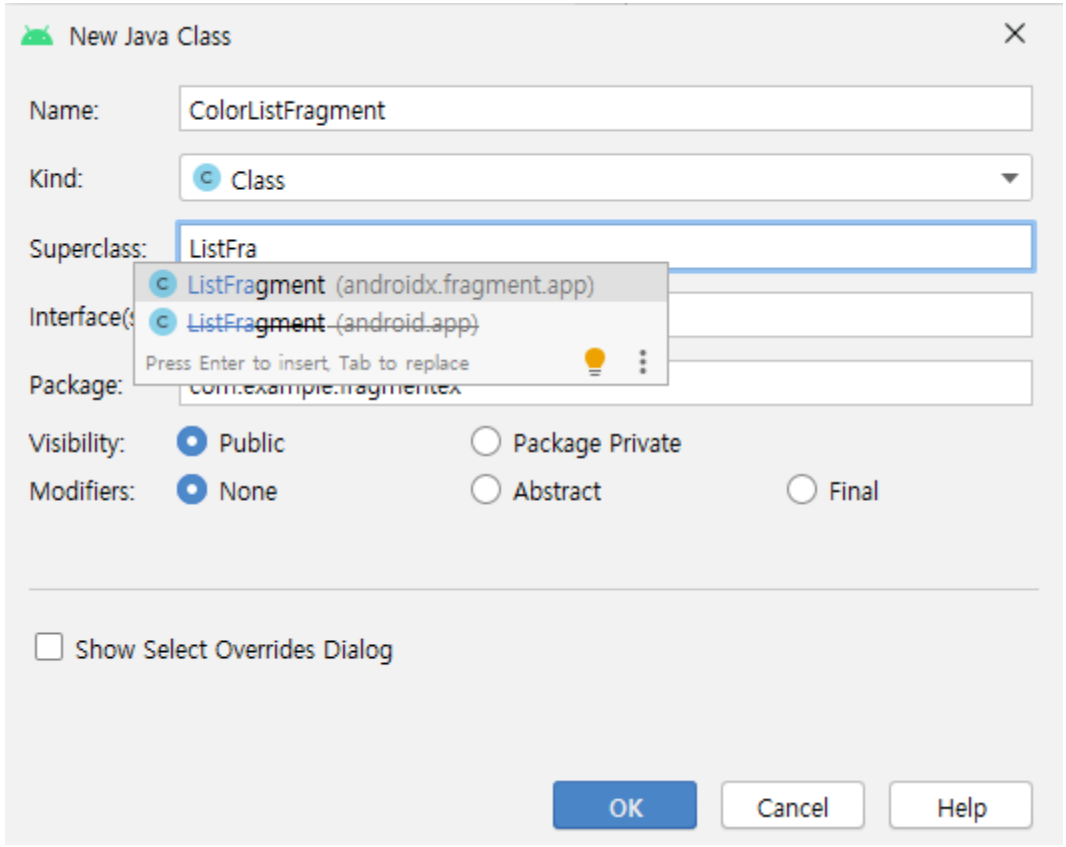
하나의 액티비티에
여러 프래그먼트가 추가, 삭제, 교체될 수 있다

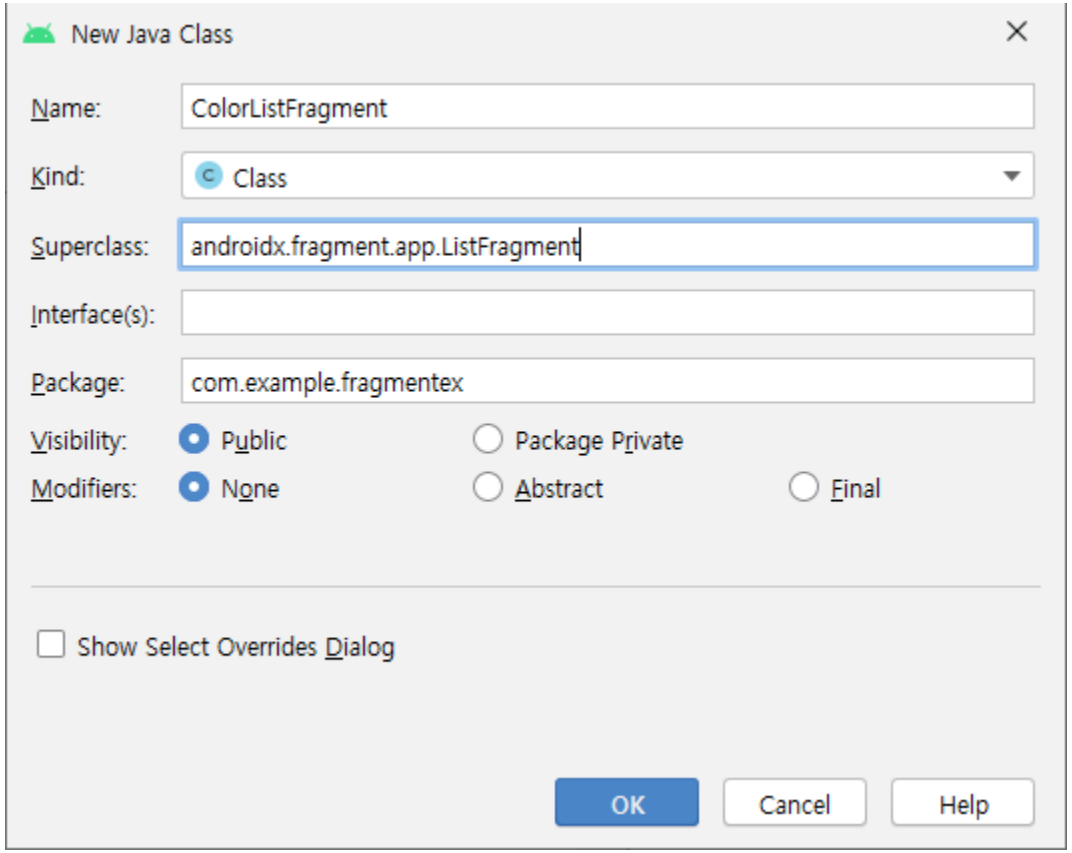





File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
FragmentEx [D:₩Android₩S
app
Pixel 3 API 28
FragmentEx app src main java com example fragmentex MainActivity
Android
activity_main.xml
ColorFragment.java
ColorListFragment.java
Resource Manager
1: Project
app
manifests
java
com.example.fragmentex
res
drawable
layout
mipmap
values
Gradle Scripts
1 package com.example.fragmentex;
3 import ...
New
Link C++ Project with Gradle
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Analyze
Refactor
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Reformat Code Ctrl+Alt+L
Optimize Imports Ctrl+Alt+O
Delete... Delete
Java Class
Kotlin File/Class
Android Resource File
Android Resource Directory
Sample Data Directory
File
Scratch File Ctrl+Alt+Shift+Insert
Package
C++ Class
C/C++ Source File
C/C++ Header File
Image Asset
Vector Asset
Kotlin Script
Kotlin Worksheet
Gradle Kotlin DSL Build Script
Gradle Kotlin DSL Settings

ColorListFragment.java



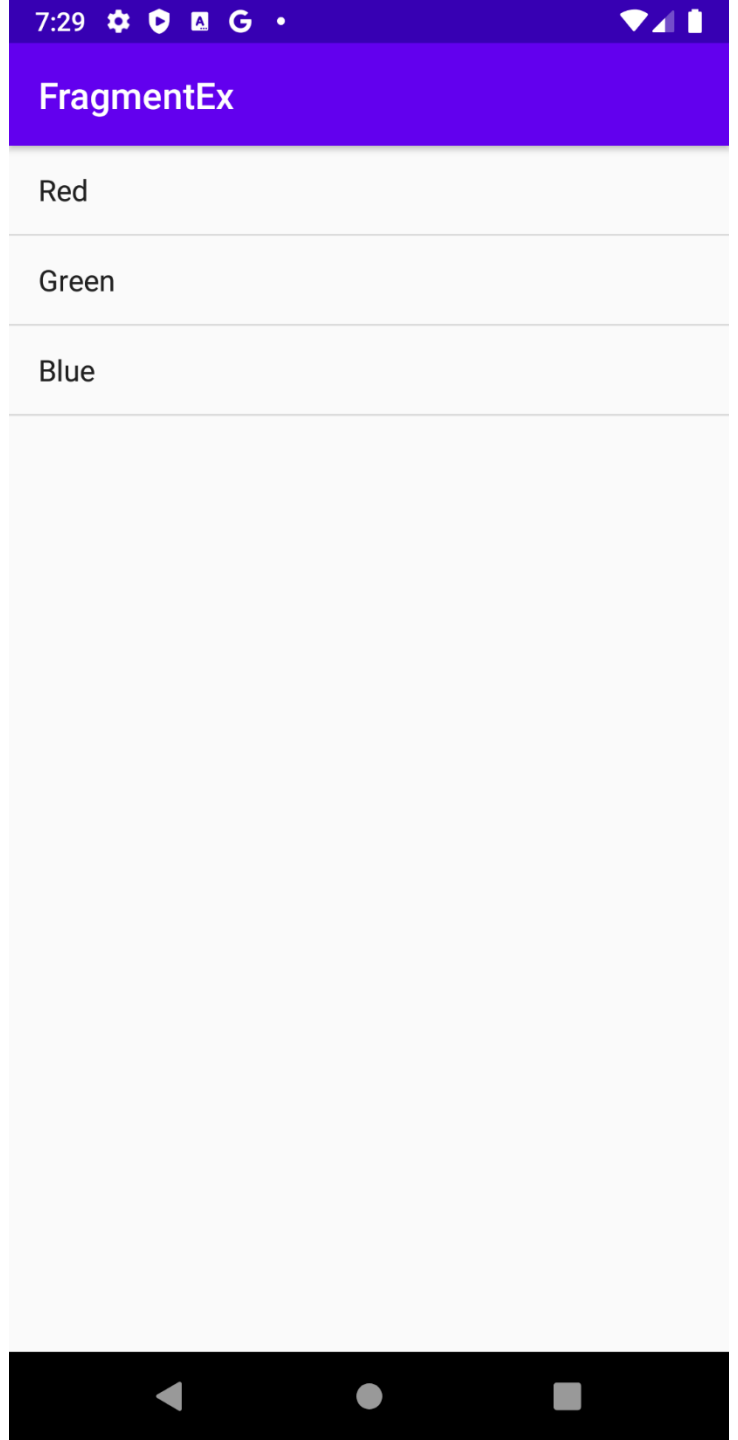


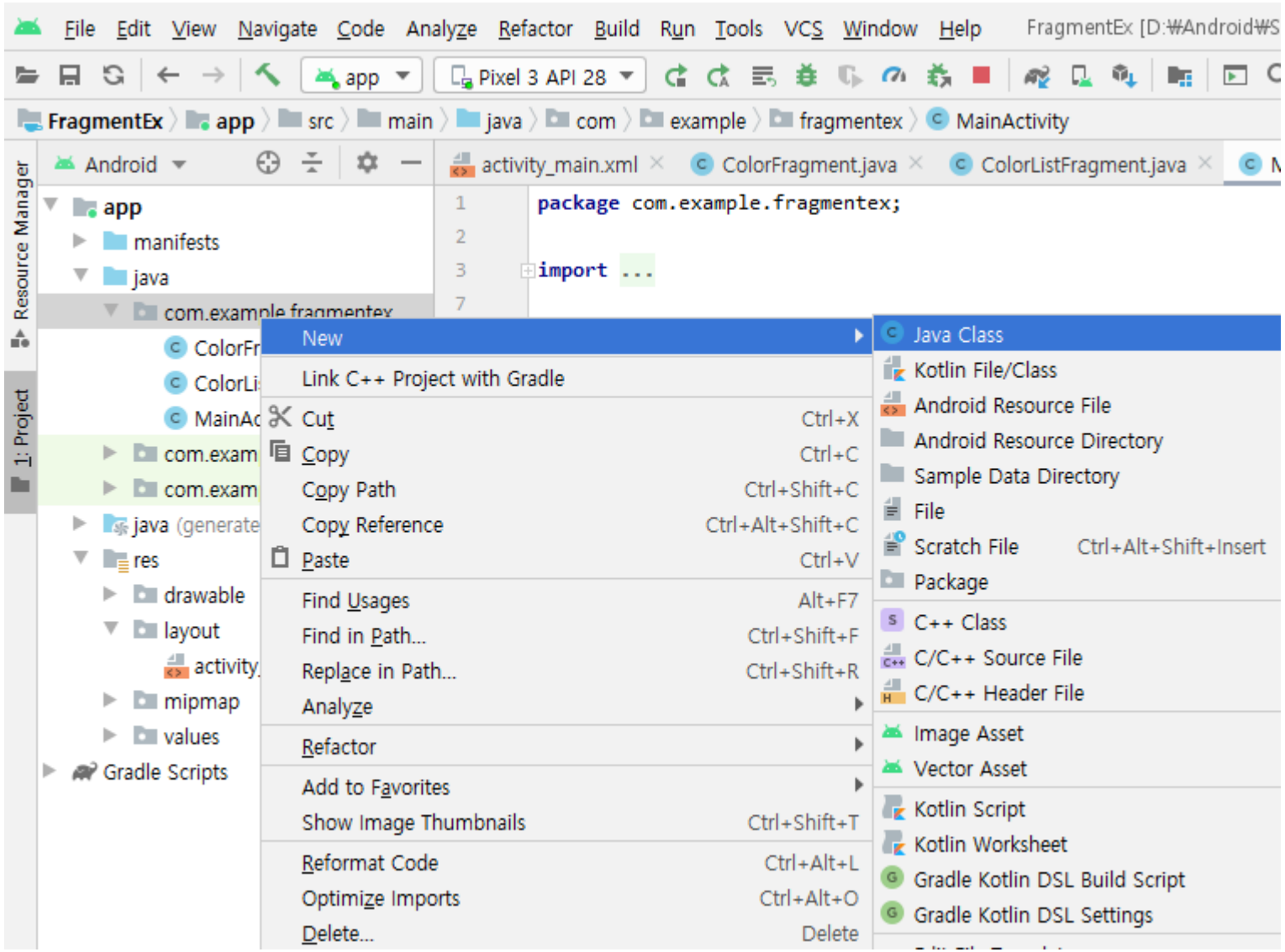
ColorListFragment.java


```
public class ColorListFragment extends ListFragment {
    @Override
    public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {
        super.onViewCreated(view, savedInstanceState);
        List<String> colorList = Arrays.asList("Red", "Green", "Blue");
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(getActivity(),
                android.R.layout.simple_list_item_1,colorList);
        setListAdapter(adapter);
    }
}
```

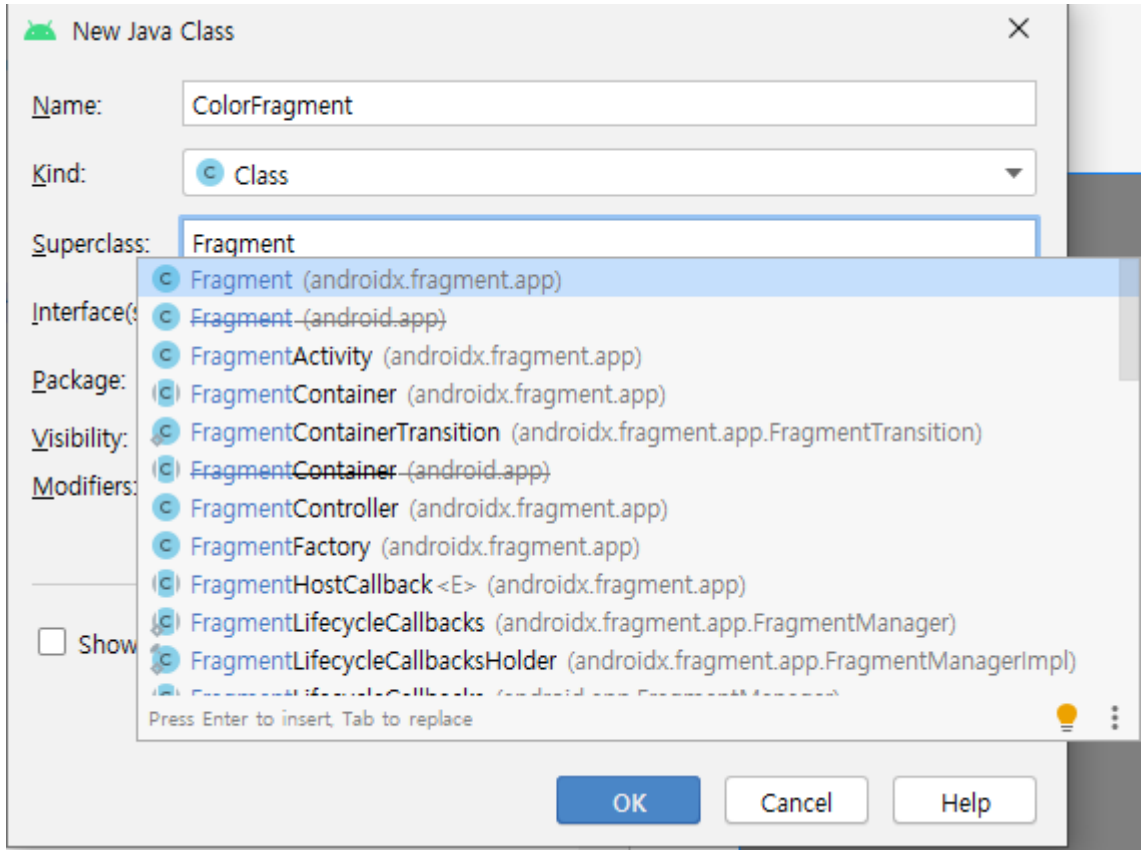
activity_main.xml

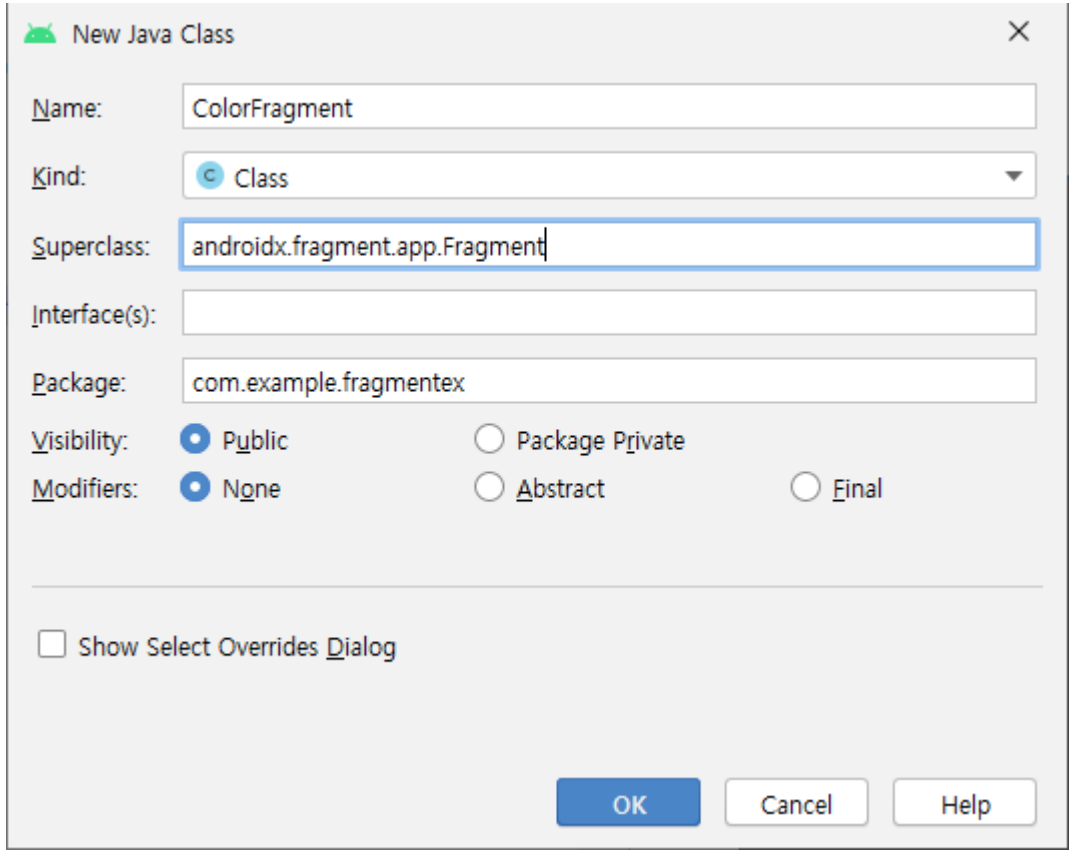

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

    <fragment
        android:id="@+id/fragment_color_list"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:name="com.example.fragmentex.ColorListFragment"
        />
</LinearLayout>
```


7:29
FragmentEx
Red
Green
Blue


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
FragmentEx [D:₩Android₩S
app
Pixel 3 API 28
FragmentEx app src main java com example fragmentex MainActivity
Android
activity_main.xml
ColorFragment.java
ColorListFragment.java
Resource Manager
1: Project
app
manifests
java
com.example.fragmentex
res
drawable
layout
mipmap
values
Gradle Scripts
1 package com.example.fragmentex;
3 import ...
New
Link C++ Project with Gradle
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Analyze
Refactor
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Reformat Code Ctrl+Alt+L
Optimize Imports Ctrl+Alt+O
Delete... Delete
Java Class
Kotlin File/Class
Android Resource File
Android Resource Directory
Sample Data Directory
File
Scratch File Ctrl+Alt+Shift+Insert
Package
C++ Class
C/C++ Source File
C/C++ Header File
Image Asset
Vector Asset
Kotlin Script
Kotlin Worksheet
Gradle Kotlin DSL Build Script
Gradle Kotlin DSL Settings

ColorFragment.java



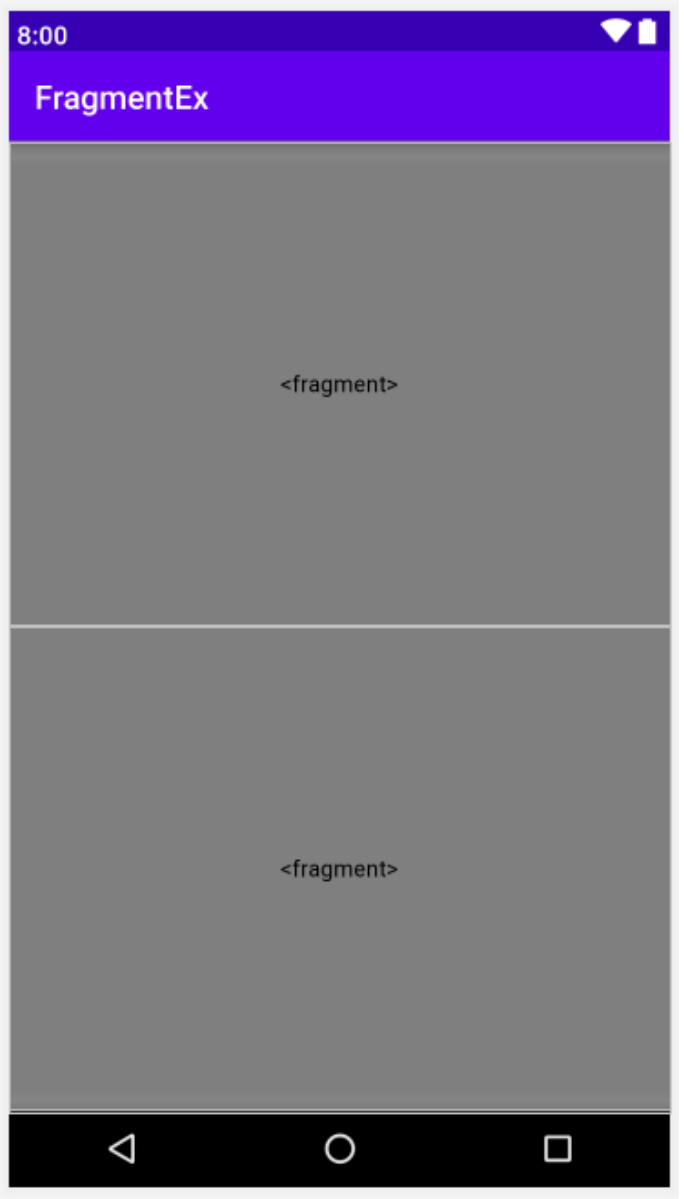


ColorFragment.java


```
public class ColorFragment extends Fragment {
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container,
@Nullable Bundle savedInstanceState) {
        return new View(getActivity());
    }

    //색상추가
    public void setColor(int color){
        getView().setBackgroundColor(color);
    }
}
```

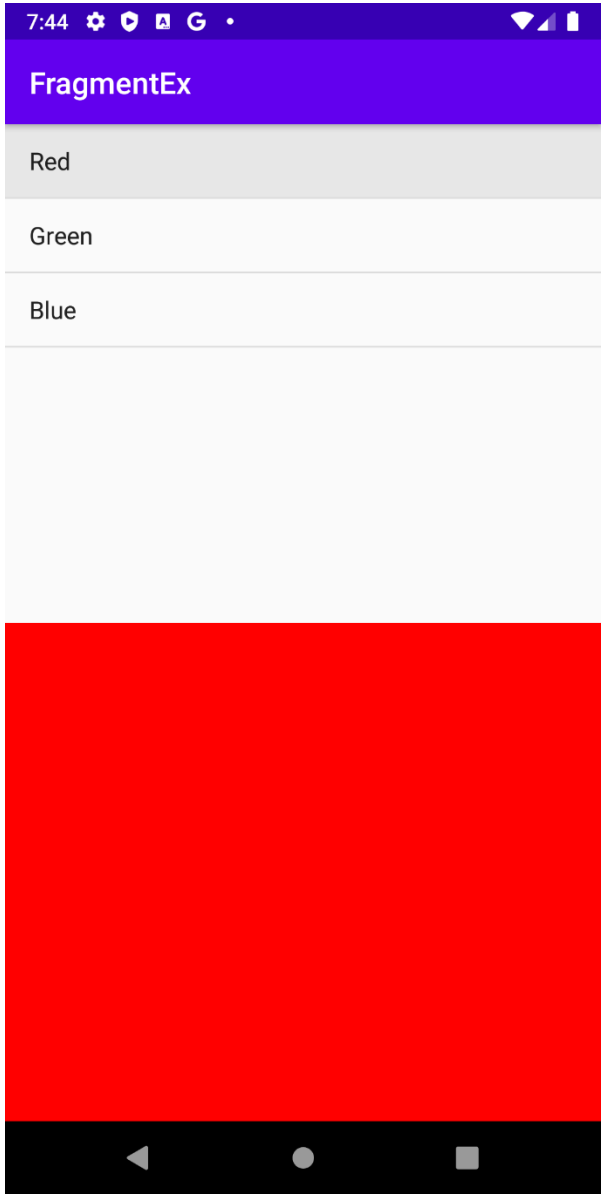
activity_main.xml


```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <fragment
        android:id="@+id/fragment_color_list"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:name="com.example.fragmentex.ColorListFragment"
        />
    <fragment
        android:id="@+id/fragment_color"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:name="com.example.fragmentex.ColorFragment"
        />
</LinearLayout>
```



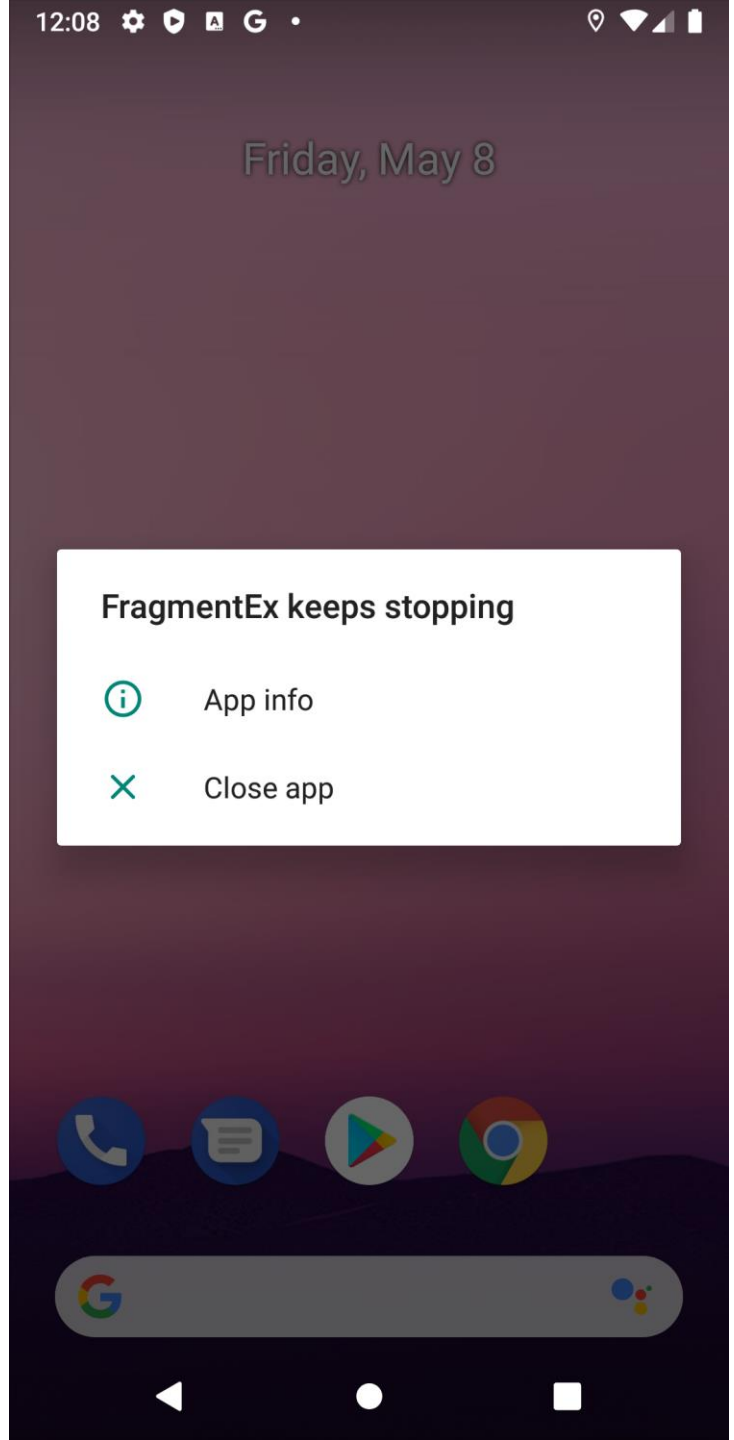
MainActivity.java


```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ColorFragment colorFragment = (ColorFragment) getSupportFragmentManager()
                .findFragmentById(R.id.fragment_color);
        colorFragment.setColor(Color.RED);
    }
}
```



ColorListFragment.java

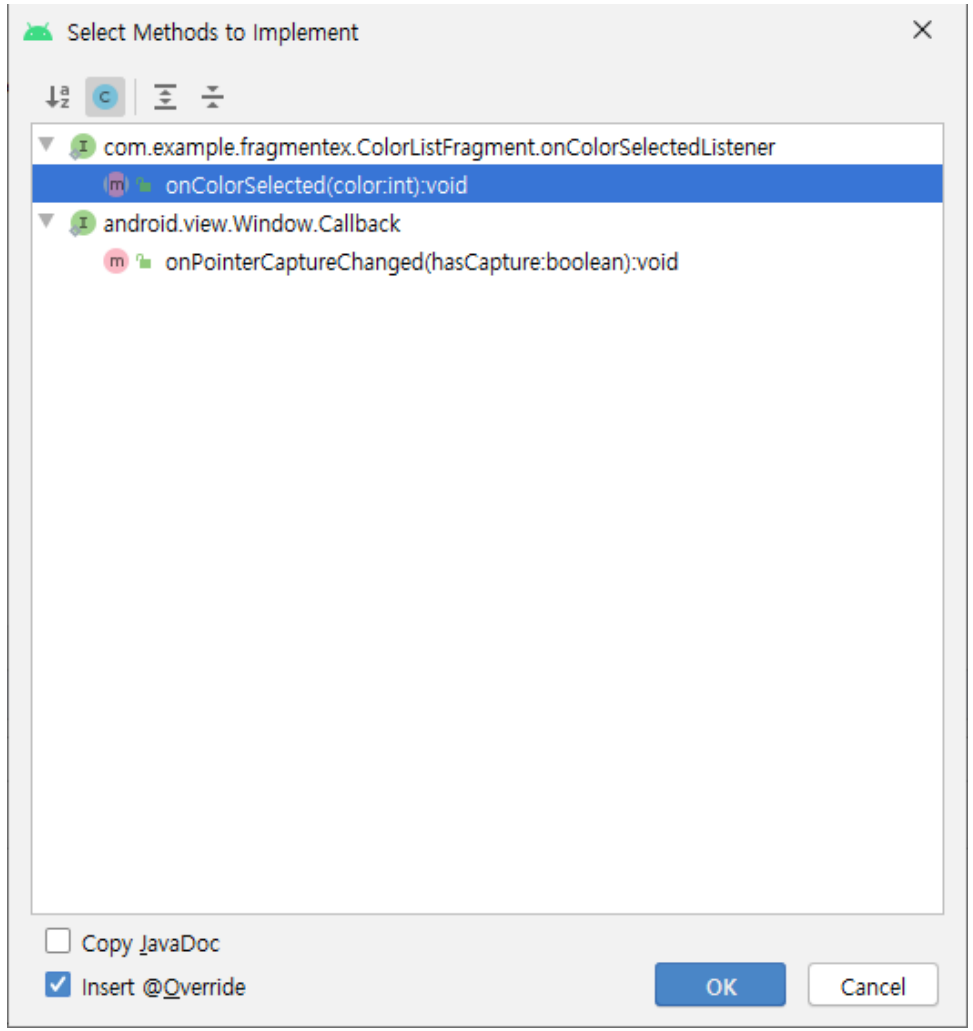

```
public class ColorListFragment extends ListFragment {

    private onColorSelectedListener mListener;
    interface onColorSelectedListener{
        void onColorSelected(int color);
    }

    @Override
    public void onAttach(@NonNull Context context) {
        super.onAttach(context);
        try{
            mListener = (onColorSelectedListener) context;
        }catch (ClassCastException e){
            throw new ClassCastException(((Activity) context).getLocalClassName()+
                    "는 OnClolorSelectedListener를 구현해야 합니다.");
        }
    }

    @Override
    public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {
        super.onViewCreated(view, savedInstanceState);
        List<String> colorList = Arrays.asList("Red", "Green", "Blue");
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(getActivity(),
                android.R.layout.simple_list_item_1,colorList);
        setListAdapter(adapter);
    }
}
```

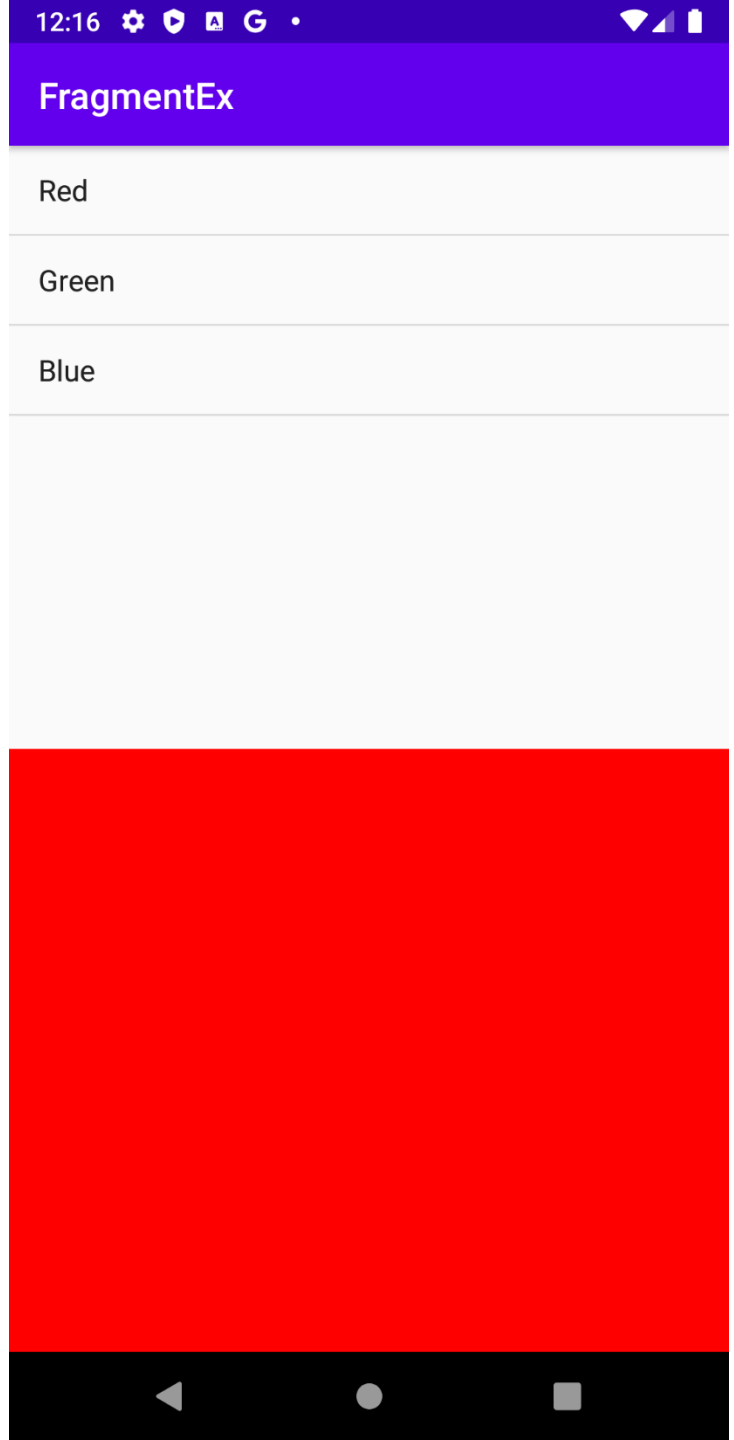

12:08
Friday, May 8
FragmentEx keeps stopping
App info
Close app

MainActivity.java


```
8  public class MainActivity extends AppCompatActivity
9                          implements ColorListFragment.onColorSelectedListener {
10
11
12
13
14
15
16                                                          mentManager()
17                 .findFragmentById(R.id.fragment_color);
18         colorFragment.setColor(Color.RED);
19     }
20 }
21
```

Implement methods
Make 'MainActivity' abstract
Add on demand static import for 'com.example.fragmentex.ColorListFragment'
Create Test
Create subclass
Remove qualifier
Unimplement Interface




12:16
FragmentEx
Red
Green
Blue

ColorListFragment.java

- List를 클릭했을때 발생하는 이벤트를 처리하는 메서드

```
37      @Override
38      public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {
39          super.onViewCreated(view, savedInstanceState);
40          List<String> colorList = Arrays.asList("Red", "Green", "Blue");
41          ArrayAdapter<String> adapter = new ArrayAdapter<String>(getActivity(),
42                  android.R.layout.simple_list_item_1,colorList);
43          setListAdapter(adapter);
44      }
45
46      onListI
47      public void onListItemClick(ListView l, View v, …   ListFragment
48  Press Enter to insert, Tab to replace
```

```
@Override
public void onListItemClick(@NonNull ListView l, @NonNull View v, int position, long id) {
    super.onListItemClick(l, v, position, id);
}
```

ColorListFragment.java


```
@Override
public void onListItemClick(@NonNull ListView l, @NonNull View v, int position, long id) {
    //프래그먼트에 있는 어댑터를  가져온다.
    ArrayAdapter<String> adapter = (ArrayAdapter<String>) l.getAdapter();
    String colorString = adapter.getItem(position);
    int color = Color.RED;
    switch (colorString){
        case "Red":
            color = Color.RED;
            break;
        case "Green":
            color = Color.GREEN;
            break;
        case "Blue":
            color = Color.BLUE;
            break;
    }
    if(mListener != null)
        mListener.onColorSelected(color);
}
```

MainActivity.java


```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    ColorFragment colorFragment = (ColorFragment) getSupportFragmentManager()
            .findFragmentById(R.id.fragment_color);
    colorFragment.setColor(Color.RED);
}
```

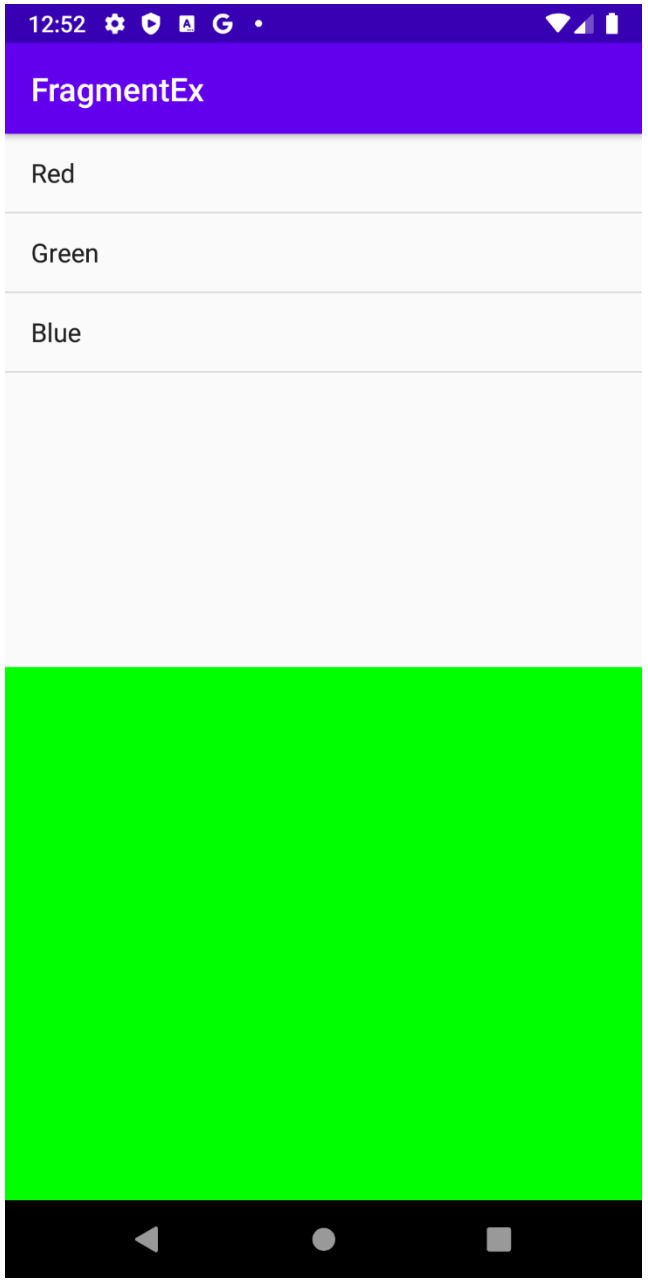

```
private ColorFragment mColorFragment;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    mColorFragment = (ColorFragment) getSupportFragmentManager()
            .findFragmentById(R.id.fragment_color);
    mColorFragment.setColor(Color.RED);
}
```

MainActivity.java


```
private ColorFragment mColorFragment;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    mColorFragment = (ColorFragment) getSupportFragmentManager()
            .findFragmentById(R.id.fragment_color);
    mColorFragment.setColor(Color.RED);
}
```

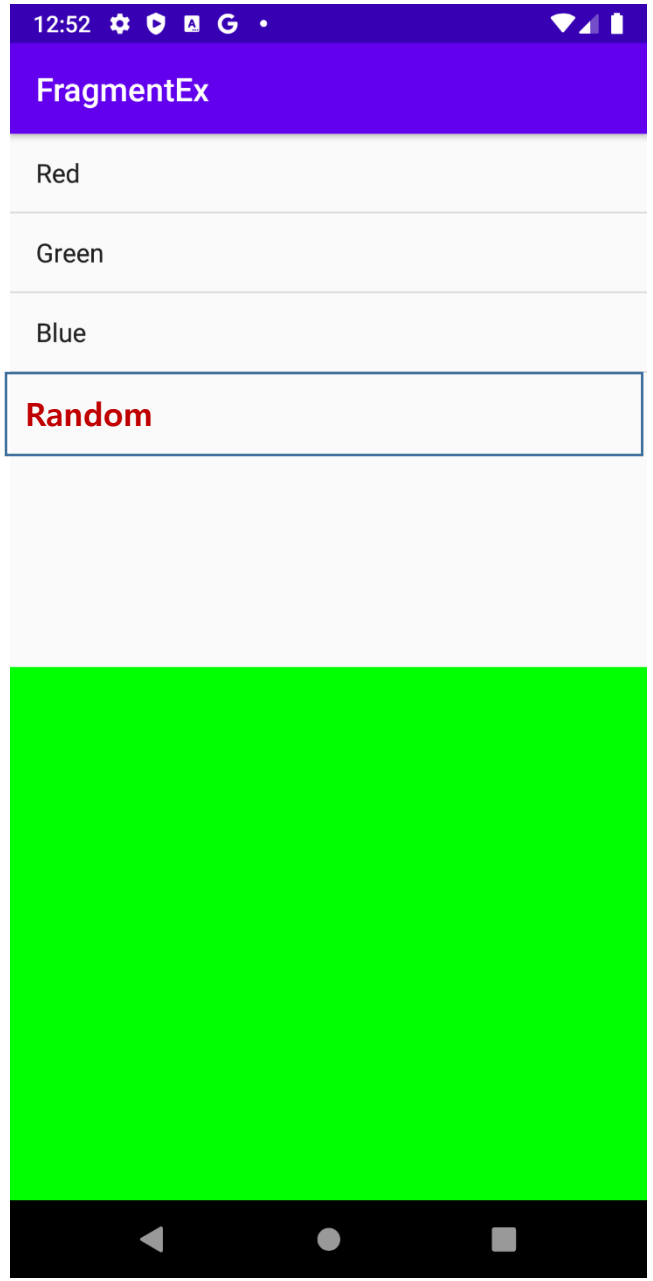
MainActivity.java

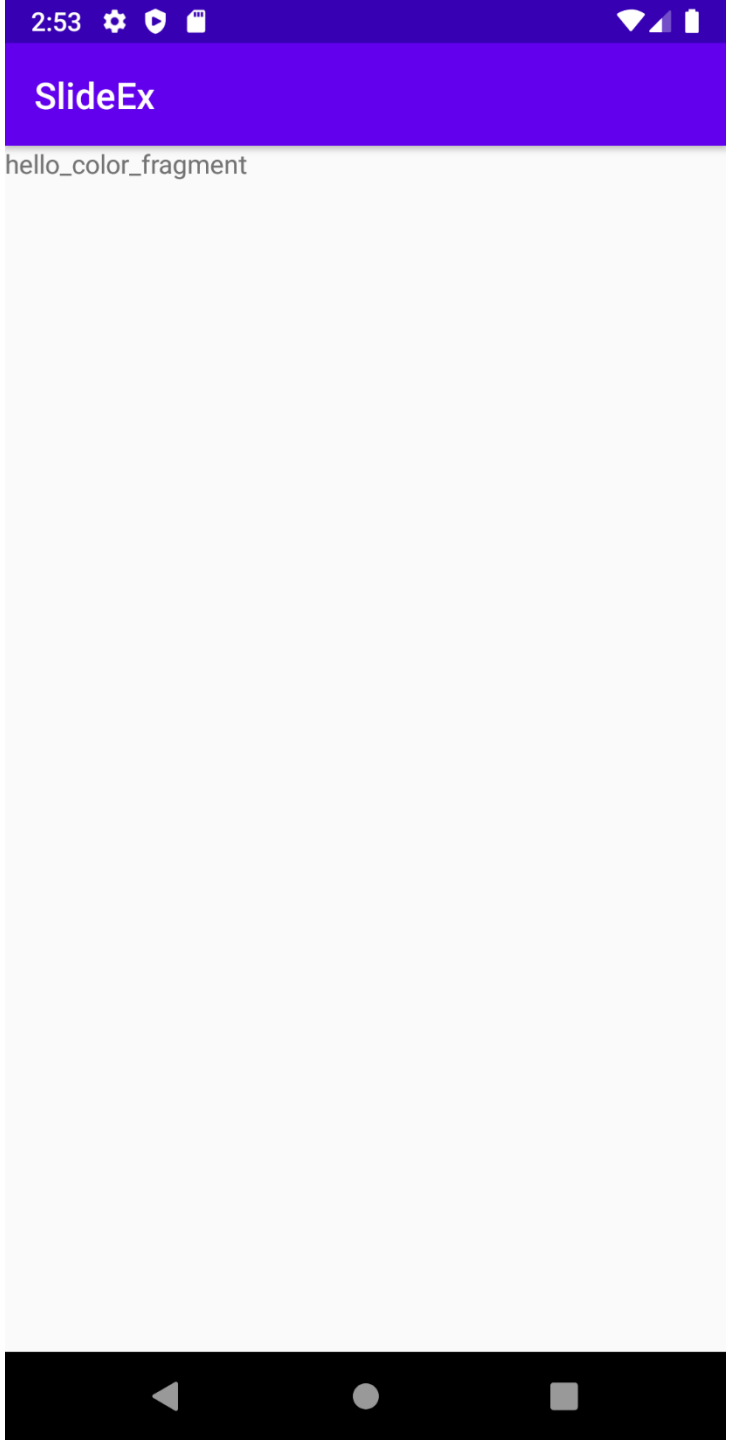

```
public class MainActivity extends AppCompatActivity
                          implements ColorListFragment.onColorSelectedListener {

    private ColorFragment mColorFragment;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mColorFragment = (ColorFragment) getSupportFragmentManager()
                .findFragmentById(R.id.fragment_color);
        mColorFragment.setColor(Color.RED);
    }

    @Override
    public void onColorSelected(int color) {
        mColorFragment.setColor(color);
    }
}
```

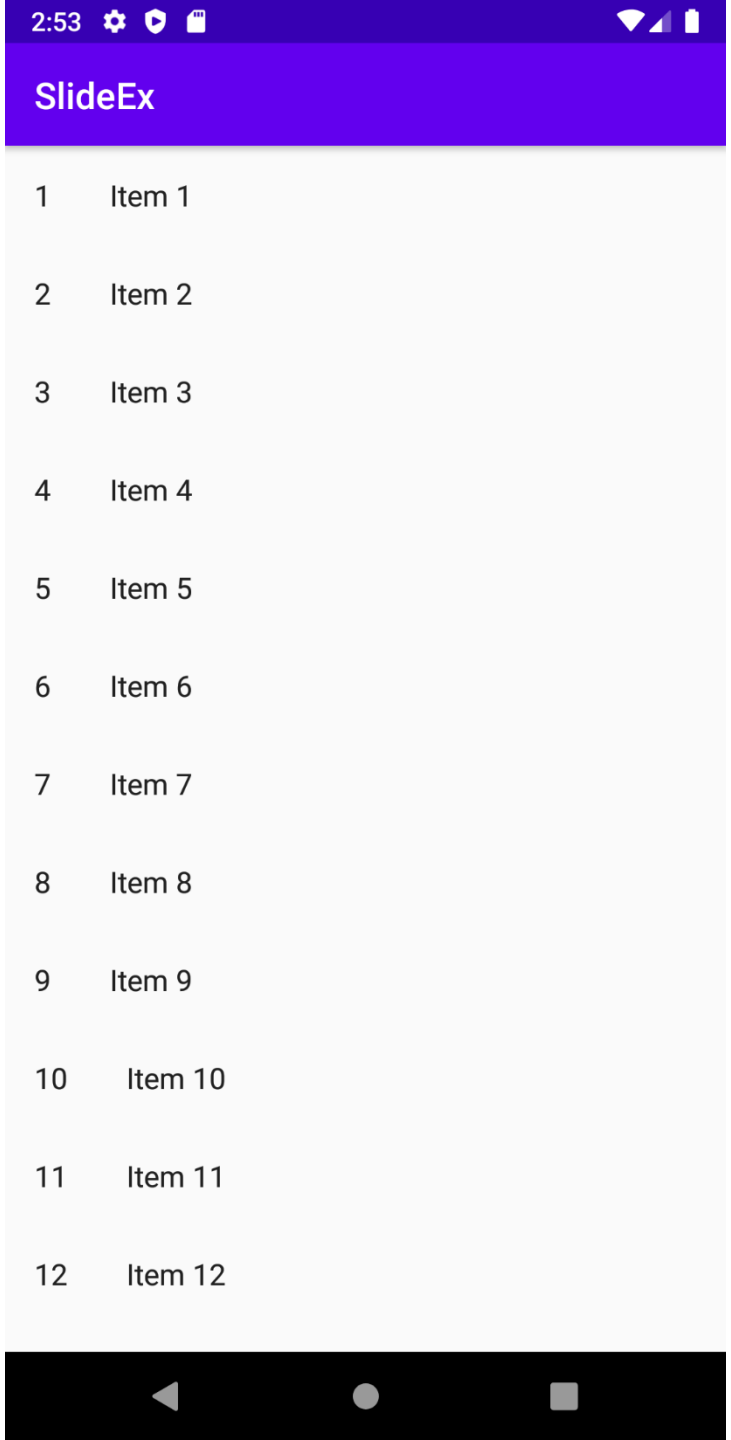


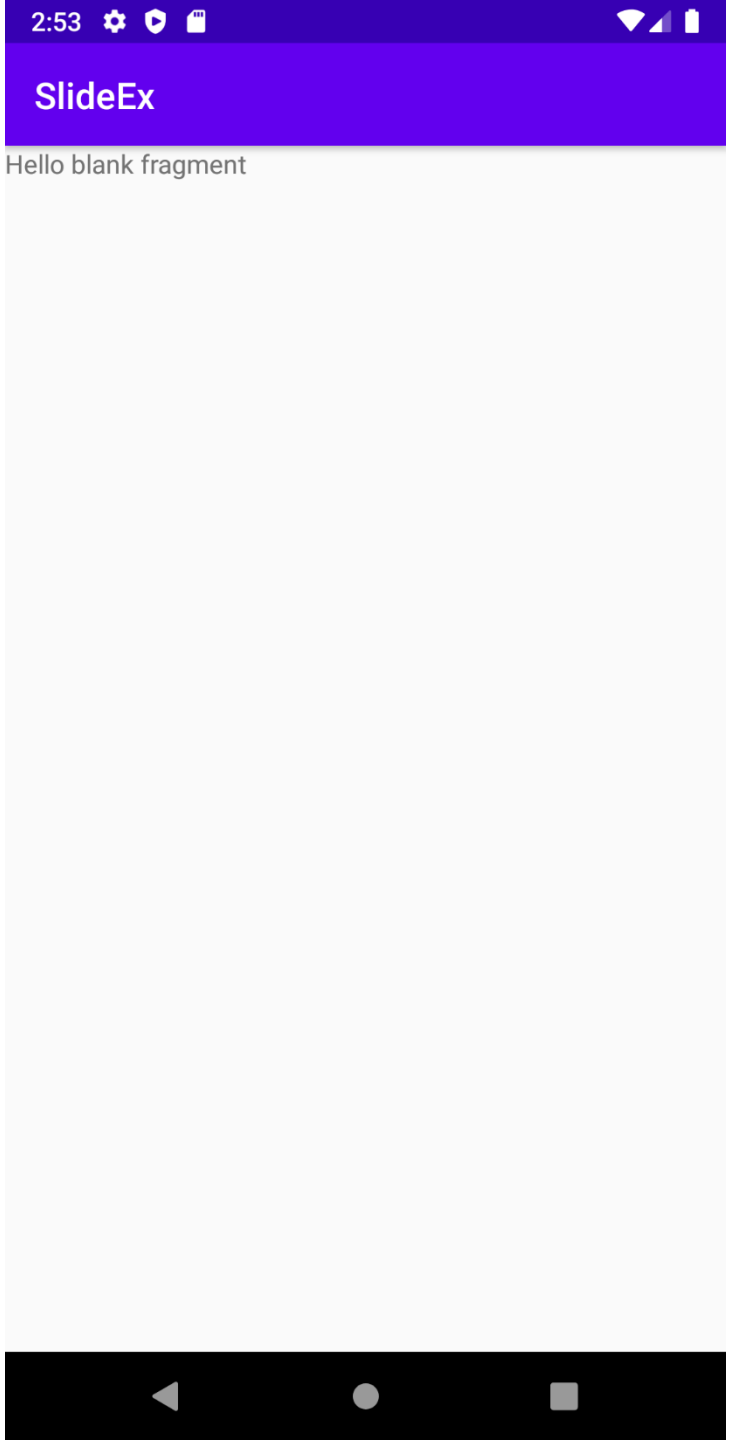
프래그먼트 교체, 삭제, 추가

```
public void change(View view) {
    ColorFragment fragment = new ColorFragment();
    // 0 ~ 255 사이의 랜덤한 정수
    int red = new Random().nextInt(256);
    int green = new Random().nextInt(256);
    int blue = new Random().nextInt(256);
    // 랜덤한 색상 설정
    fragment.setColor(Color.rgb(red, green, blue));
    getSupportFragmentManager().beginTransaction()
                               .replace(R.id.container, fragment)
                               .commit();
}
```



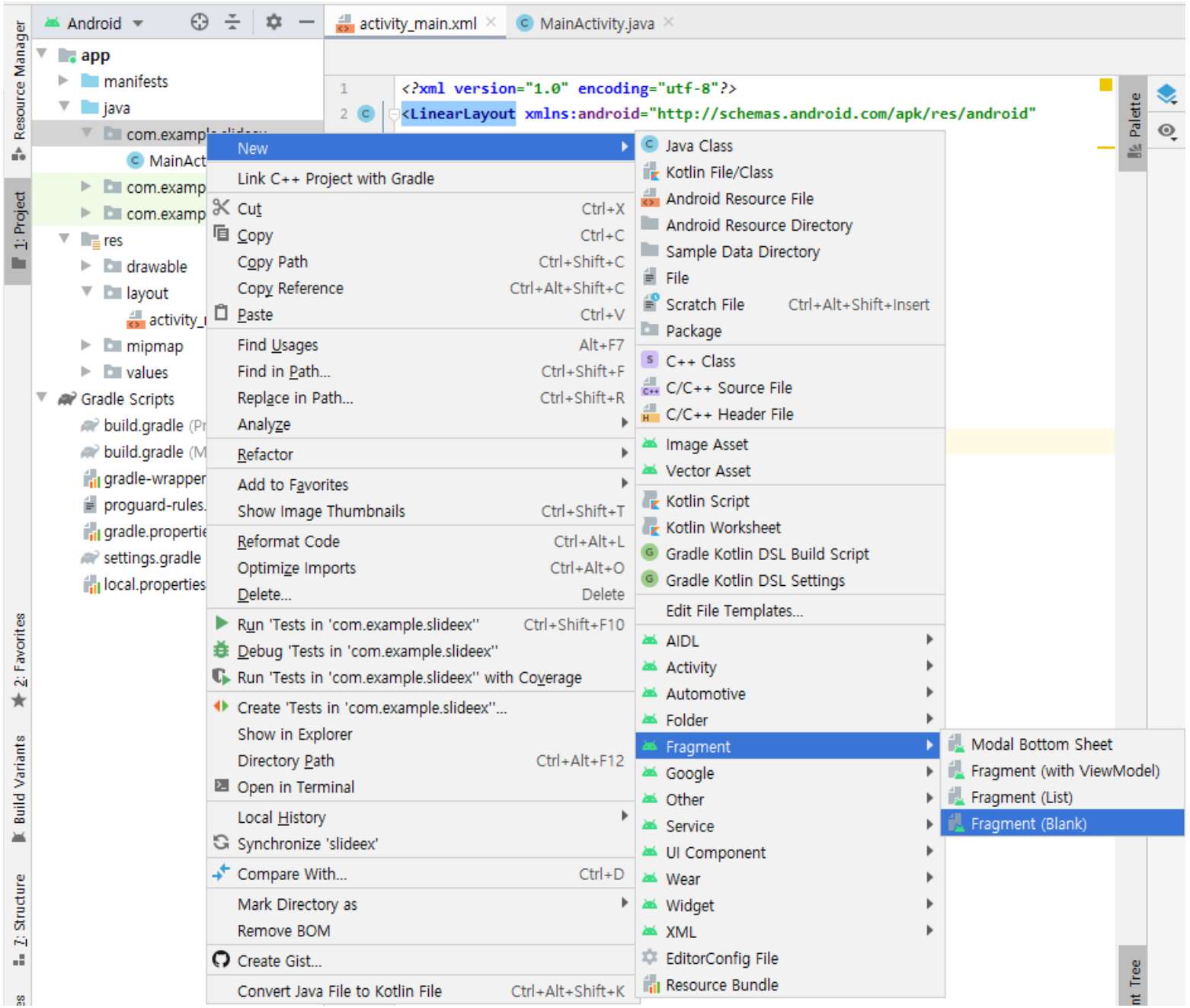

2:53
SlideEx
hello_color_fragment


2:53
SlideEx
1 Item 1
2 Item 2
3 Item 3
4 Item 4
5 Item 5
6 Item 6
7 Item 7
8 Item 8
9 Item 9
10 Item 10
11 Item 11
12 Item 12

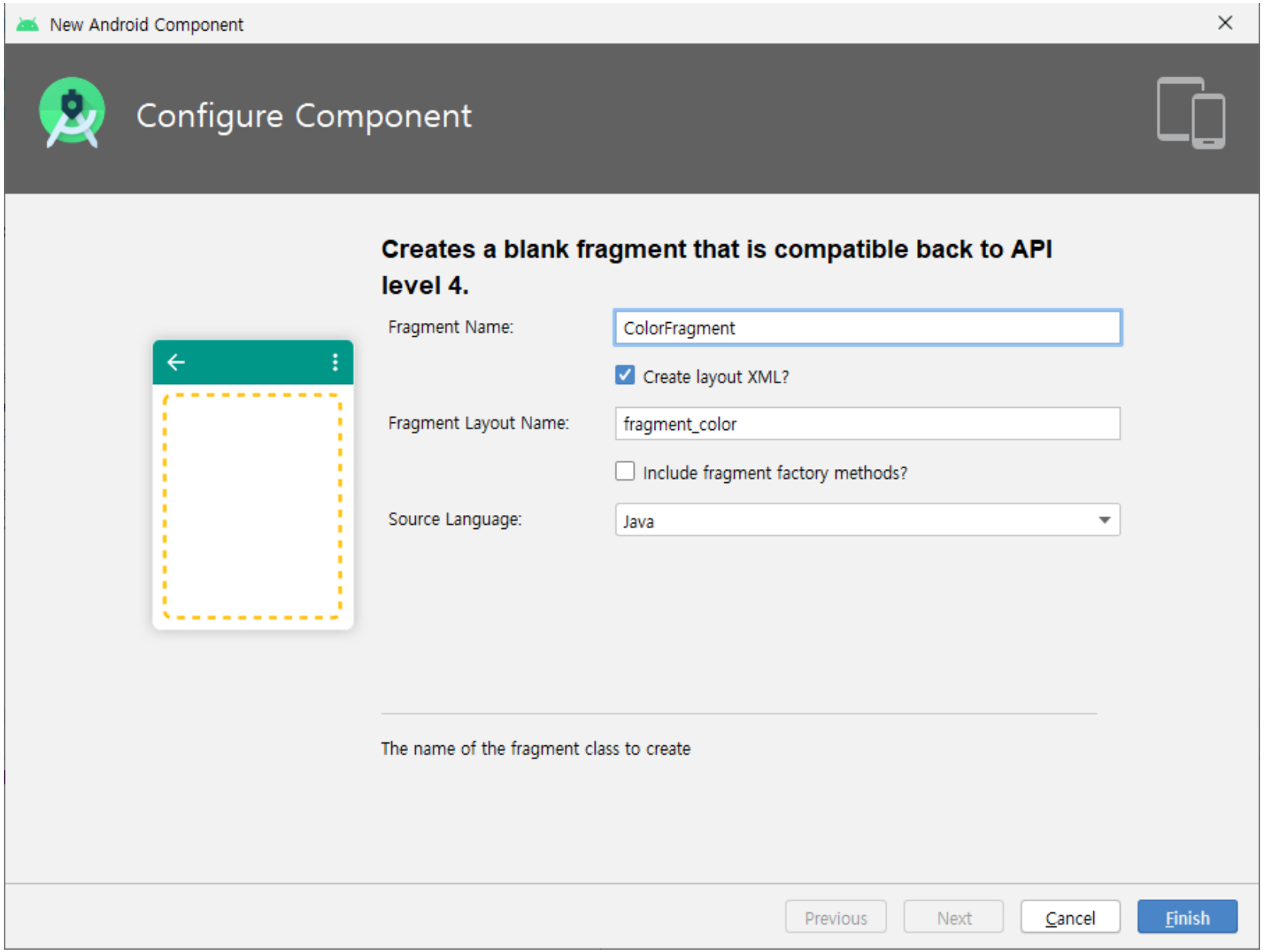

2:53
SlideEx
Hello blank fragment

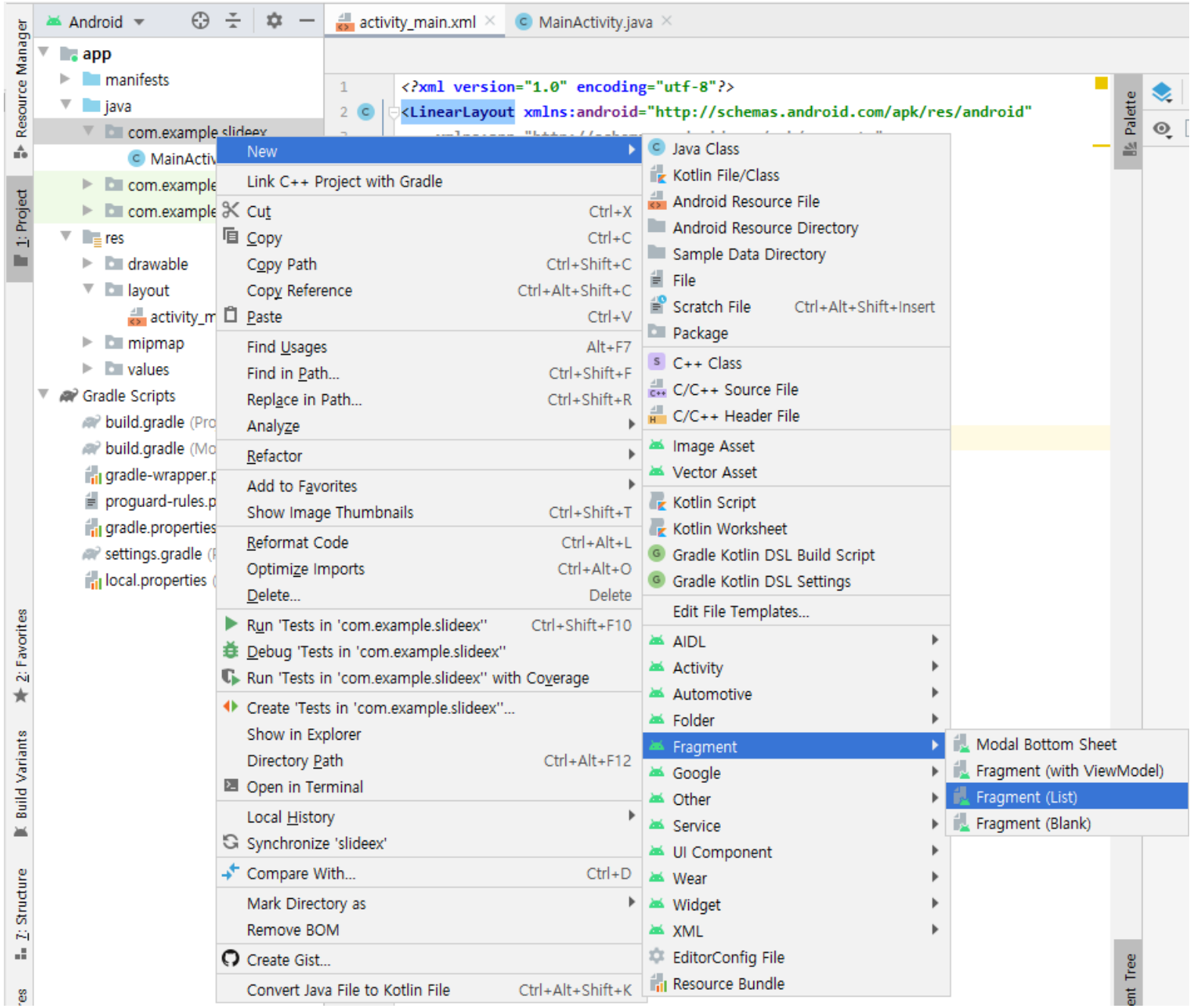
activity_main.xml


```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <androidx.viewpager.widget.ViewPager
        android:id="@+id/pager"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```

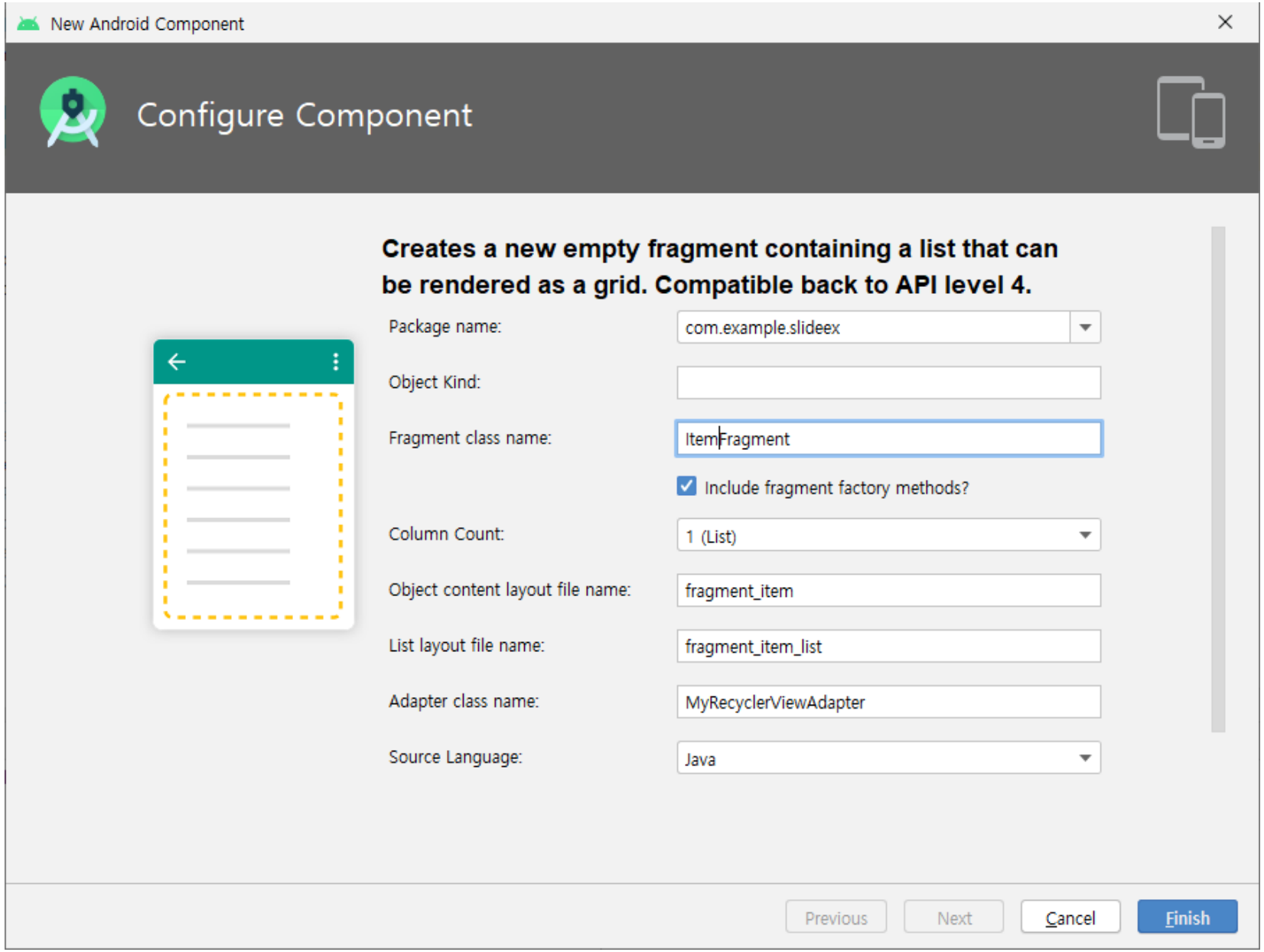

Android
activity_main.xml
MainActivity.java
app
manifests
java
res
drawable
layout
mipmap
values
Gradle Scripts
build.gradle
settings.gradle
local.properties
1: Project
Resource Manager
2: Favorites
Build Variants
7: Structure
Palette
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
New
Link C++ Project with Gradle
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Analyze
Refactor
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Reformat Code Ctrl+Alt+L
Optimize Imports Ctrl+Alt+O
Delete... Delete
Run 'Tests in 'com.example.slideex'' Ctrl+Shift+F10
Debug 'Tests in 'com.example.slideex''
Run 'Tests in 'com.example.slideex'' with Coverage
Create 'Tests in 'com.example.slideex''...
Show in Explorer
Directory Path Ctrl+Alt+F12
Open in Terminal
Local History
Synchronize 'slideex'
Compare With... Ctrl+D
Mark Directory as
Remove BOM
Create Gist...
Convert Java File to Kotlin File Ctrl+Alt+Shift+K
Java Class
Kotlin File/Class
Android Resource File
Android Resource Directory
Sample Data Directory
File
Scratch File Ctrl+Alt+Shift+Insert
Package
C++ Class
C/C++ Source File
C/C++ Header File
Image Asset
Vector Asset
Kotlin Script
Kotlin Worksheet
Gradle Kotlin DSL Build Script
Gradle Kotlin DSL Settings
Edit File Templates...
AIDL
Activity
Automotive
Folder
Fragment
Google
Other
Service
UI Component
Wear
Widget
XML
EditorConfig File
Resource Bundle
Modal Bottom Sheet
Fragment (with ViewModel)
Fragment (List)
Fragment (Blank)

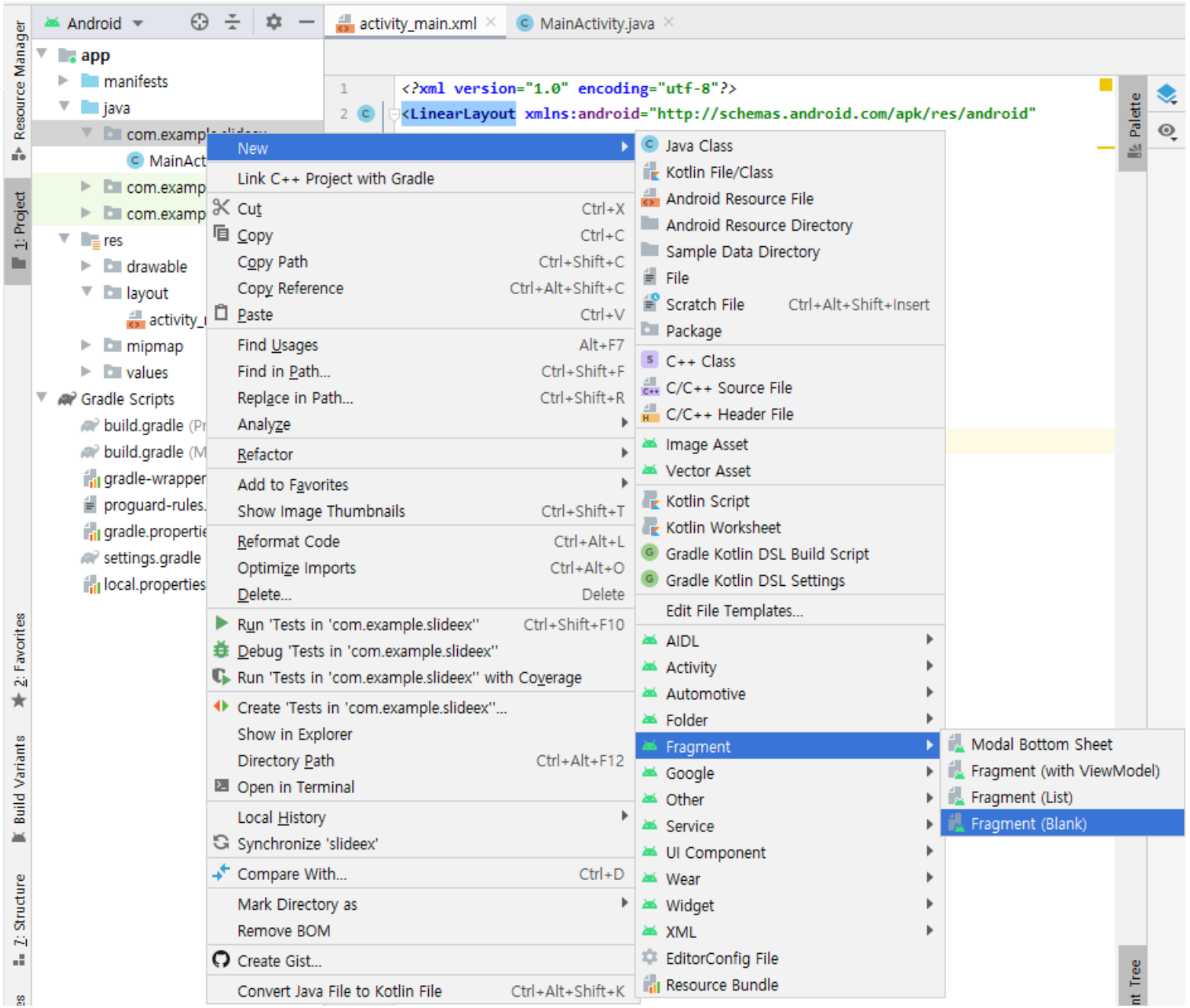
Fragment생성 - ColorFragment



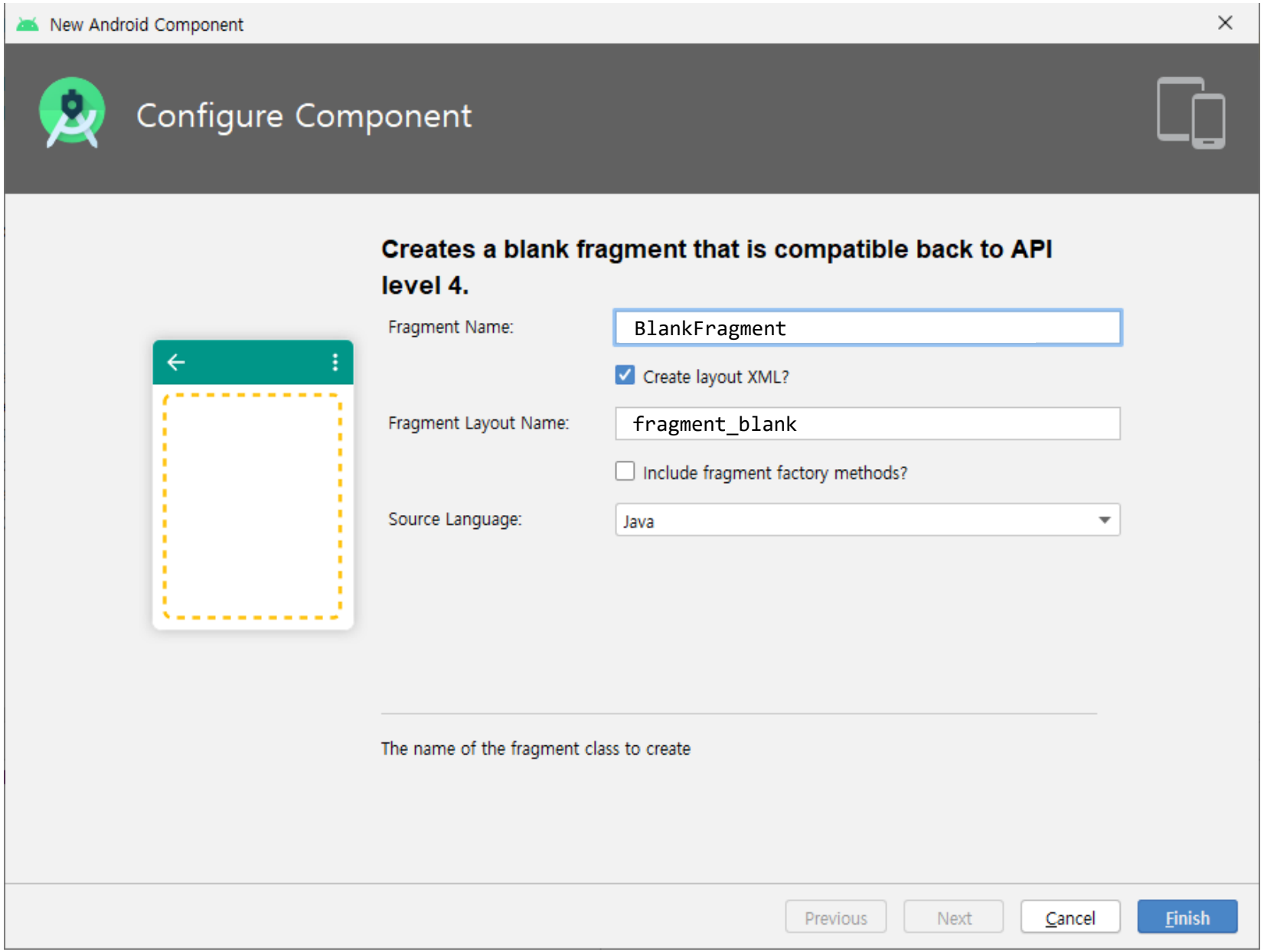

Android
activity_main.xml
MainActivity.java
app
manifests
java
com.example.slideex
MainActi
com.example
com.example
res
drawable
layout
activity_m
mipmap
values
Gradle Scripts
build.gradle (Pro
build.gradle (Mo
gradle-wrapper.p
proguard-rules.p
gradle.properties
settings.gradle
local.properties
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
New
Link C++ Project with Gradle
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Analyze
Refactor
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Reformat Code Ctrl+Alt+L
Optimize Imports Ctrl+Alt+O
Delete... Delete
Run 'Tests in 'com.example.slideex'' Ctrl+Shift+F10
Debug 'Tests in 'com.example.slideex''
Run 'Tests in 'com.example.slideex'' with Coverage
Create 'Tests in 'com.example.slideex''...
Show in Explorer
Directory Path Ctrl+Alt+F12
Open in Terminal
Local History
Synchronize 'slideex'
Compare With... Ctrl+D
Mark Directory as
Remove BOM
Create Gist...
Convert Java File to Kotlin File Ctrl+Alt+Shift+K
Java Class
Kotlin File/Class
Android Resource File
Android Resource Directory
Sample Data Directory
File
Scratch File Ctrl+Alt+Shift+Insert
Package
C++ Class
C/C++ Source File
C/C++ Header File
Image Asset
Vector Asset
Kotlin Script
Kotlin Worksheet
Gradle Kotlin DSL Build Script
Gradle Kotlin DSL Settings
Edit File Templates...
AIDL
Activity
Automotive
Folder
Fragment
Google
Other
Service
UI Component
Wear
Widget
XML
EditorConfig File
Resource Bundle
Modal Bottom Sheet
Fragment (with ViewModel)
Fragment (List)
Fragment (Blank)
Resource Manager
1: Project
2: Favorites
Build Variants
7: Structure
Palette

Fragment생성 - ItemFragment

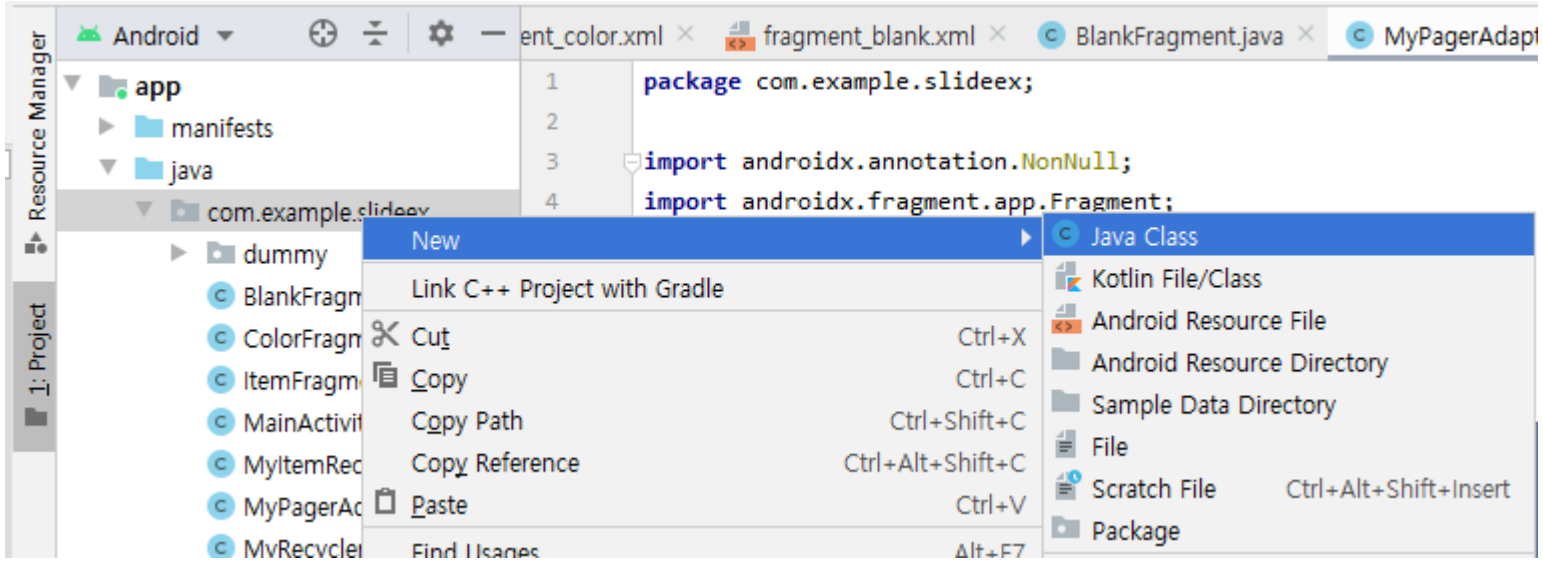


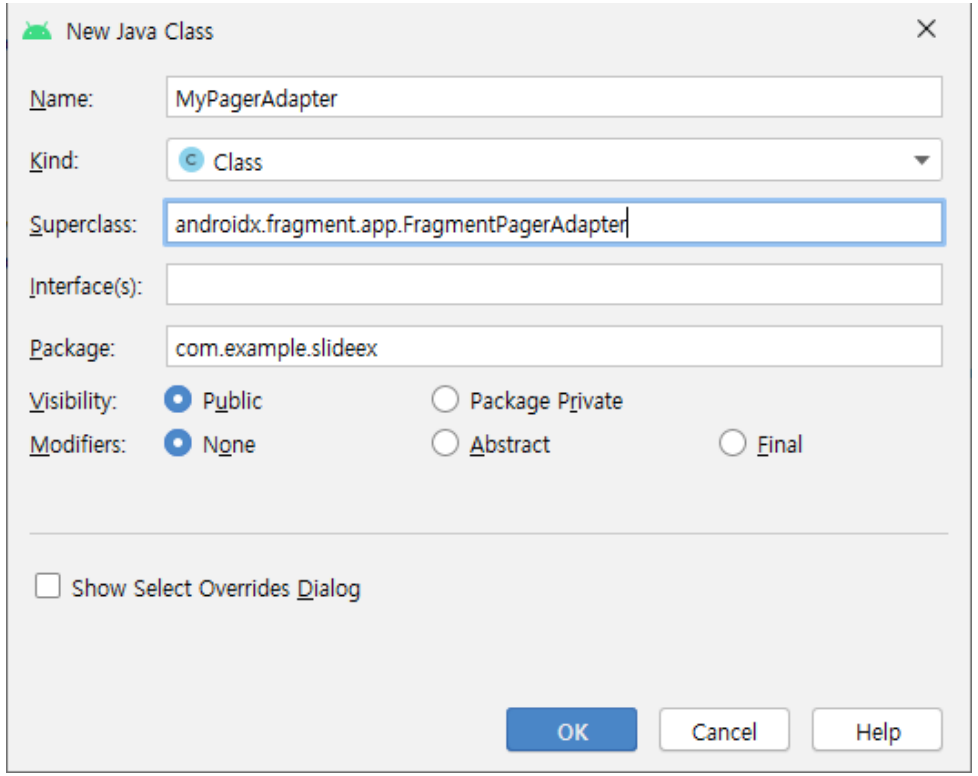

Android
activity_main.xml
MainActivity.java
app
manifests
java
res
drawable
layout
mipmap
values
Gradle Scripts
build.gradle
settings.gradle
local.properties
1: Project
Resource Manager
2: Favorites
Build Variants
7: Structure
Palette
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
New
Link C++ Project with Gradle
Cut Ctrl+X
Copy Ctrl+C
Copy Path Ctrl+Shift+C
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Find Usages Alt+F7
Find in Path... Ctrl+Shift+F
Replace in Path... Ctrl+Shift+R
Analyze
Refactor
Add to Favorites
Show Image Thumbnails Ctrl+Shift+T
Reformat Code Ctrl+Alt+L
Optimize Imports Ctrl+Alt+O
Delete... Delete
Run 'Tests in 'com.example.slideex'' Ctrl+Shift+F10
Debug 'Tests in 'com.example.slideex''
Run 'Tests in 'com.example.slideex'' with Coverage
Create 'Tests in 'com.example.slideex''...
Show in Explorer
Directory Path Ctrl+Alt+F12
Open in Terminal
Local History
Synchronize 'slideex'
Compare With... Ctrl+D
Mark Directory as
Remove BOM
Create Gist...
Convert Java File to Kotlin File Ctrl+Alt+Shift+K
Java Class
Kotlin File/Class
Android Resource File
Android Resource Directory
Sample Data Directory
File
Scratch File Ctrl+Alt+Shift+Insert
Package
C++ Class
C/C++ Source File
C/C++ Header File
Image Asset
Vector Asset
Kotlin Script
Kotlin Worksheet
Gradle Kotlin DSL Build Script
Gradle Kotlin DSL Settings
Edit File Templates...
AIDL
Activity
Automotive
Folder
Fragment
Google
Other
Service
UI Component
Wear
Widget
XML
EditorConfig File
Resource Bundle
Modal Bottom Sheet
Fragment (with ViewModel)
Fragment (List)
Fragment (Blank)

Fragment 생성 - BlankFragment



MyPagerAdapter.java

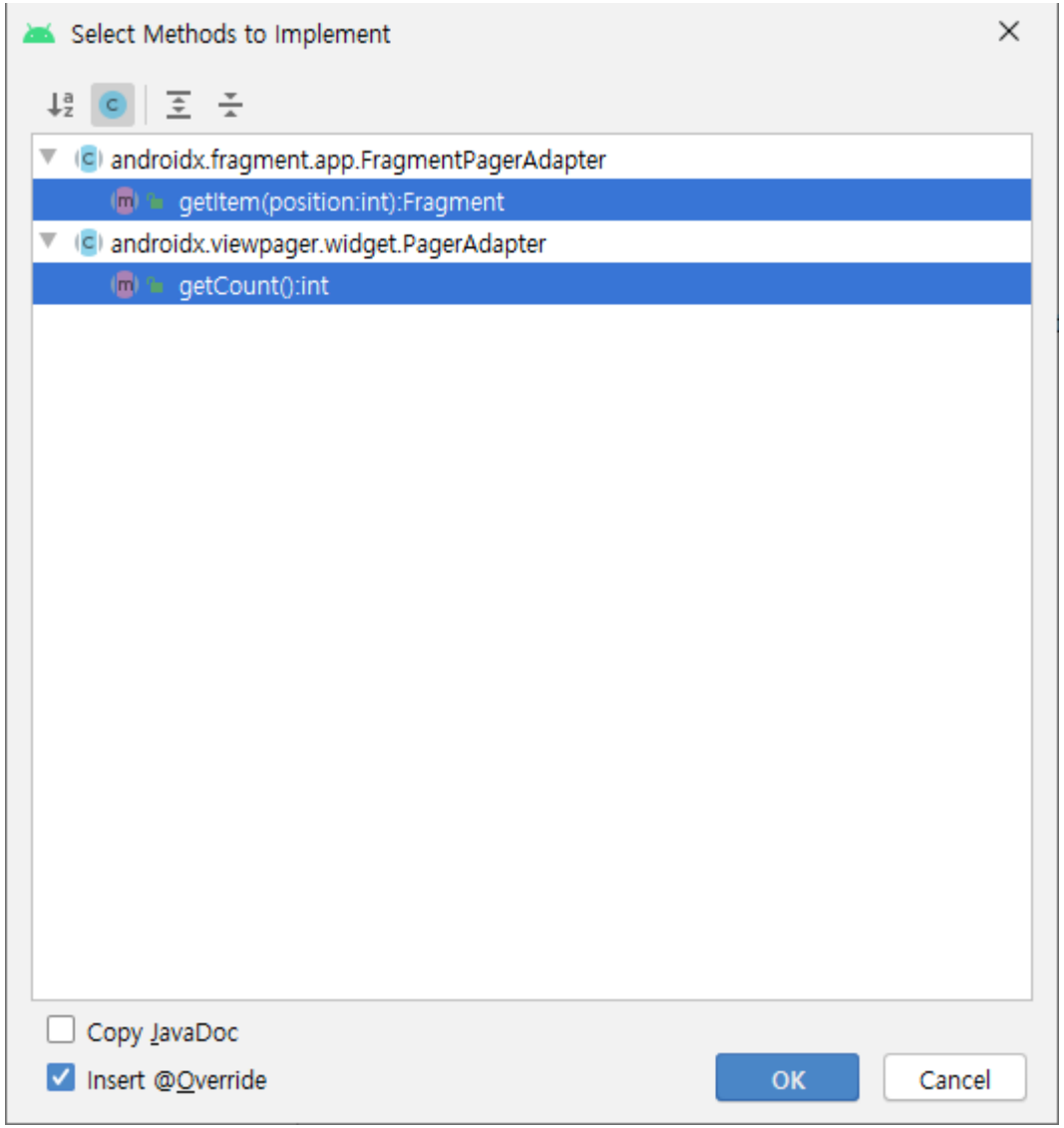




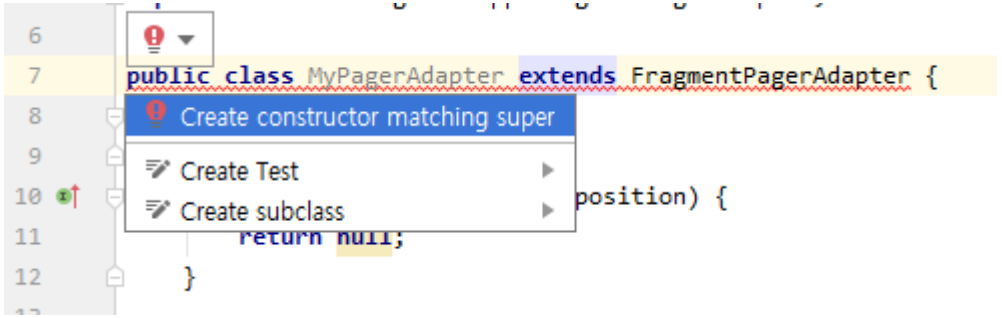
MyPagerAdapter.java

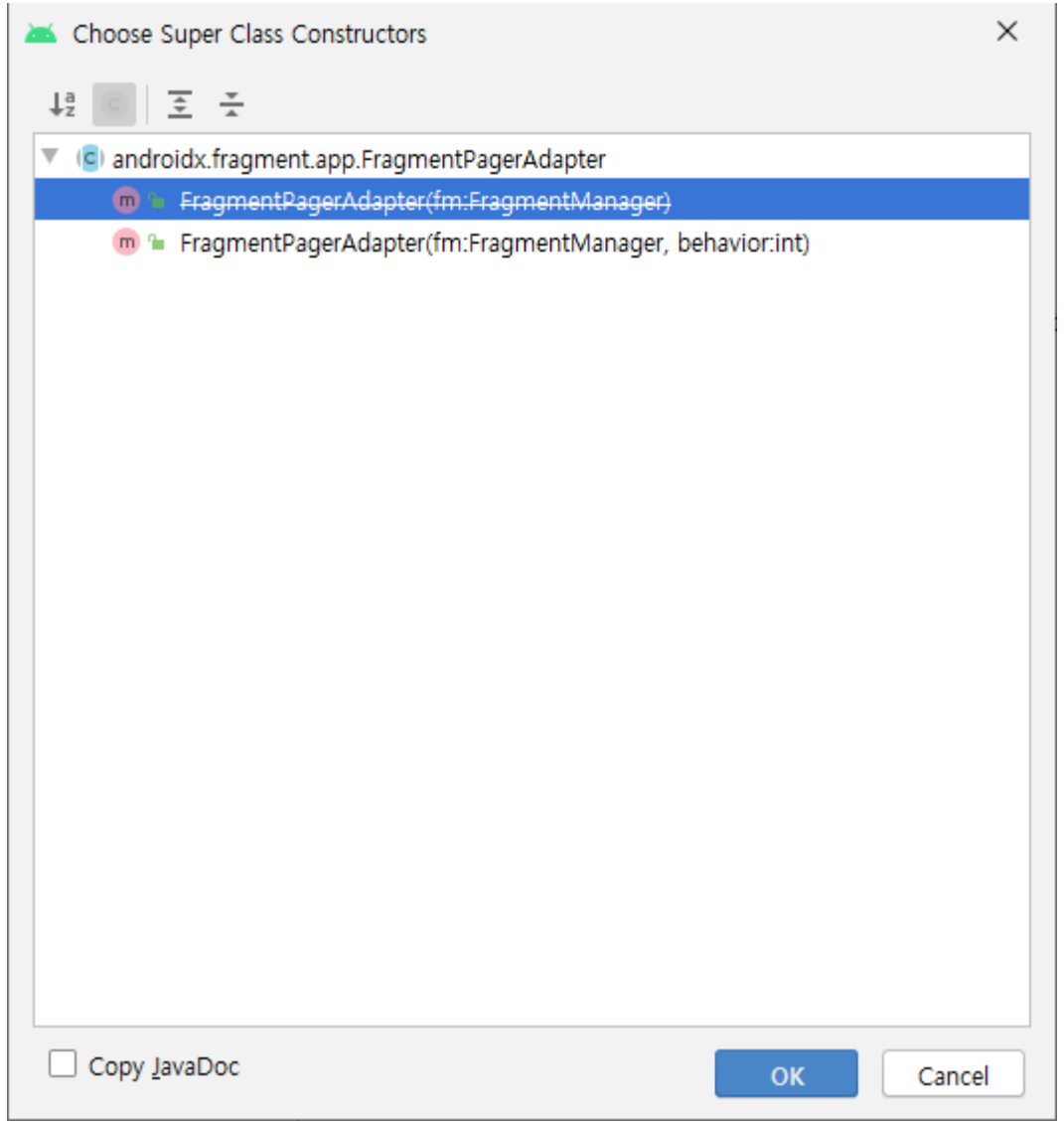

```
3   import androidx.fragment.app.FragmentPagerAdapter;
4
5   public class MyPagerAdapter extends FragmentPagerAdapter {
6
7
```

- Implement methods
- Make 'MyPagerAdapter' abstract
- Create Test
- Create subclass
- Unimplement Class



MyPagerAdapter.java






```
public MyPagerAdapter(@NonNull FragmentManager fm) {
    super(fm);
}
```

MyPagerAdapter.java

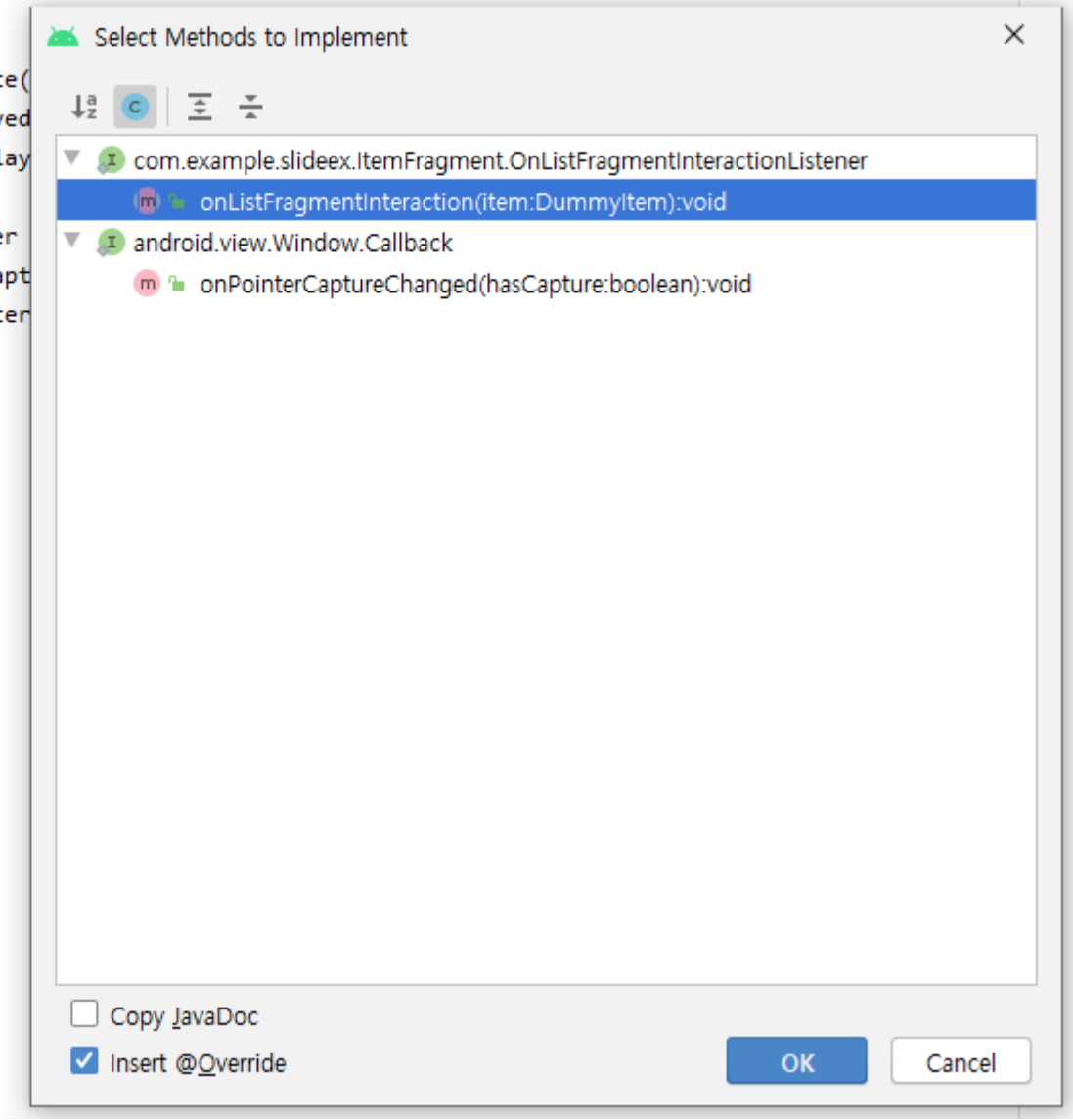

```
public class MyPagerAdapter extends FragmentPagerAdapter {

    private ArrayList<Fragment> mData;

    public MyPagerAdapter(@NonNull FragmentManager fm) {
        super(fm);
        mData = new ArrayList<>();
        mData.add(new ColorFragment());
        mData.add(new ItemFragment());
        mData.add(new BlankFragment());
    }

    @NonNull
    @Override
    public Fragment getItem(int position) {
        return mData.get(position);
    }

    @Override
    public int getCount() {
        return mData.size();
    }
}
```

MainActivity.java


```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ViewPager viewPager = findViewById(R.id.pager);
        MyPagerAdapter adapter = new MyPagerAdapter(getSupportFragmentManager());
        viewPager.setAdapter(adapter);

    }
}
```

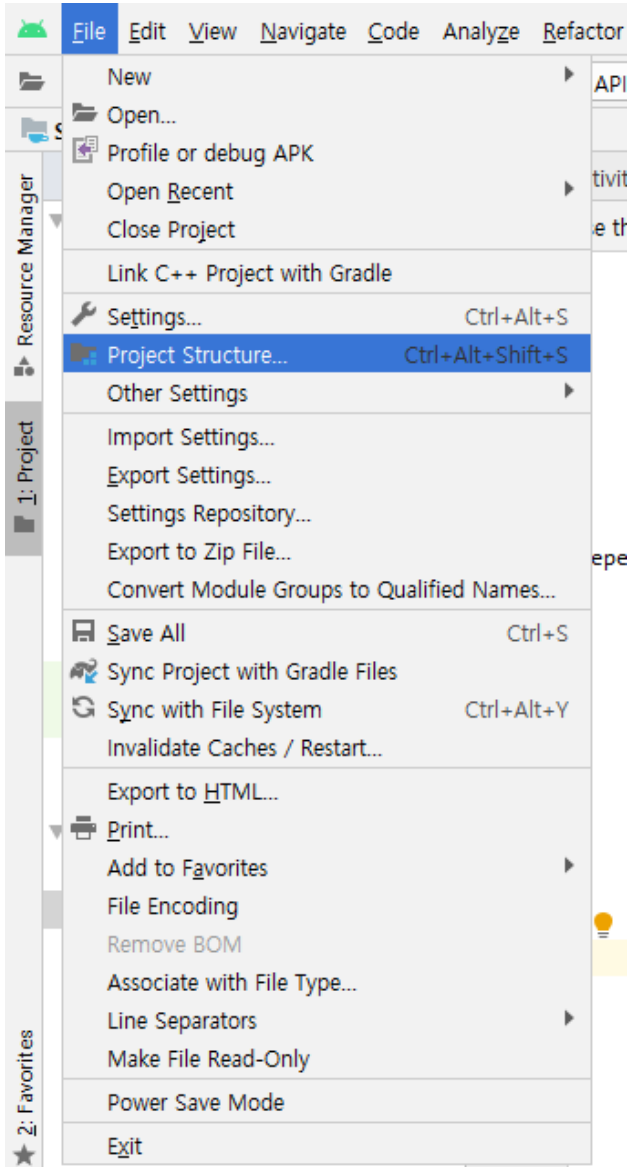
MainActivity.java

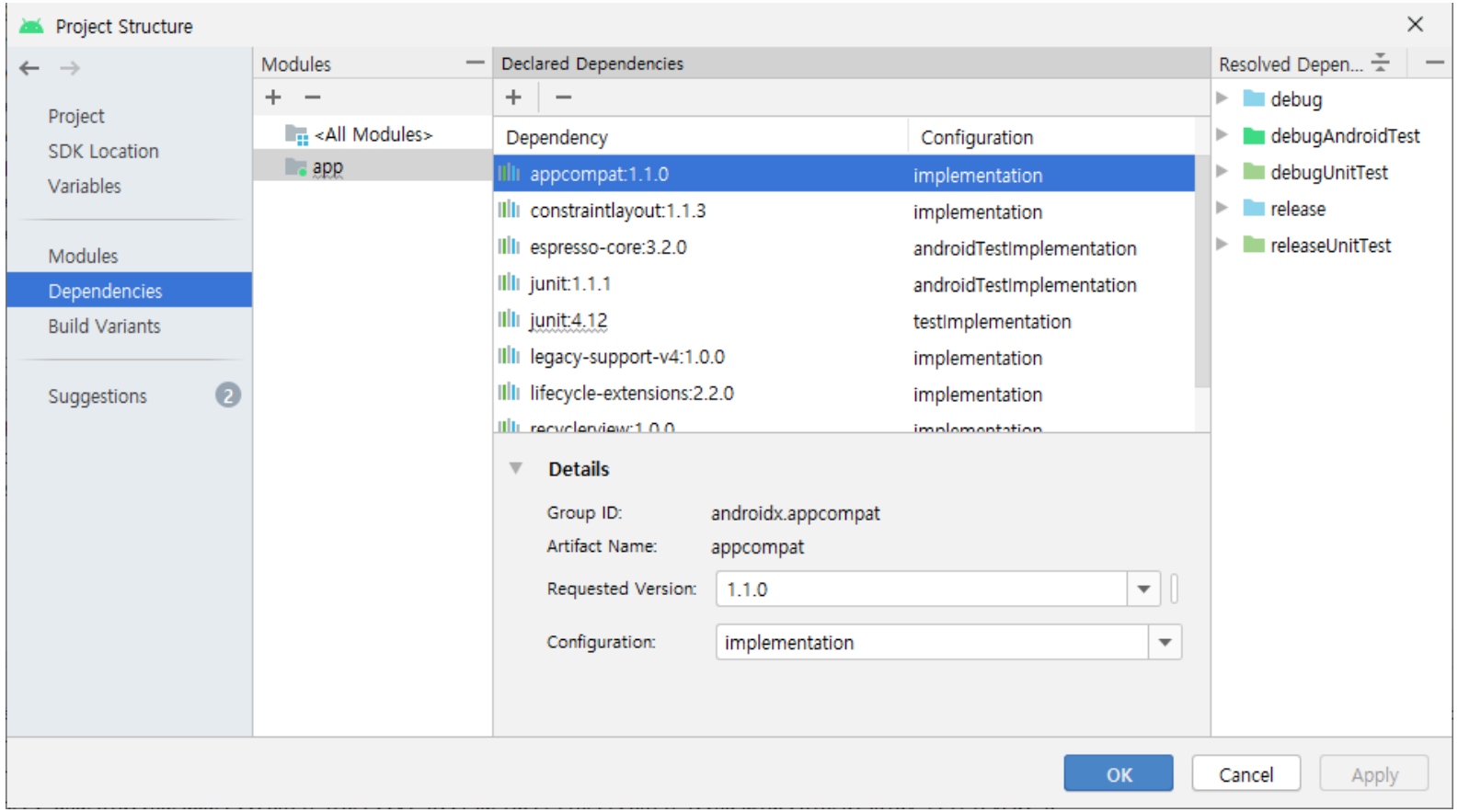

```
8  public class MainActivity extends AppCompatActivity implements ItemFragment.OnListFragmentInteractionListener{
9
10     @Override
11     protected void onCreate(
12         super.onCreate(saved
13         setContentView(R.lay
14
15         ViewPager viewPager
16         MyPagerAdapter adapt
17         viewPager.setAdapter
18
19     }
20 }
21
```

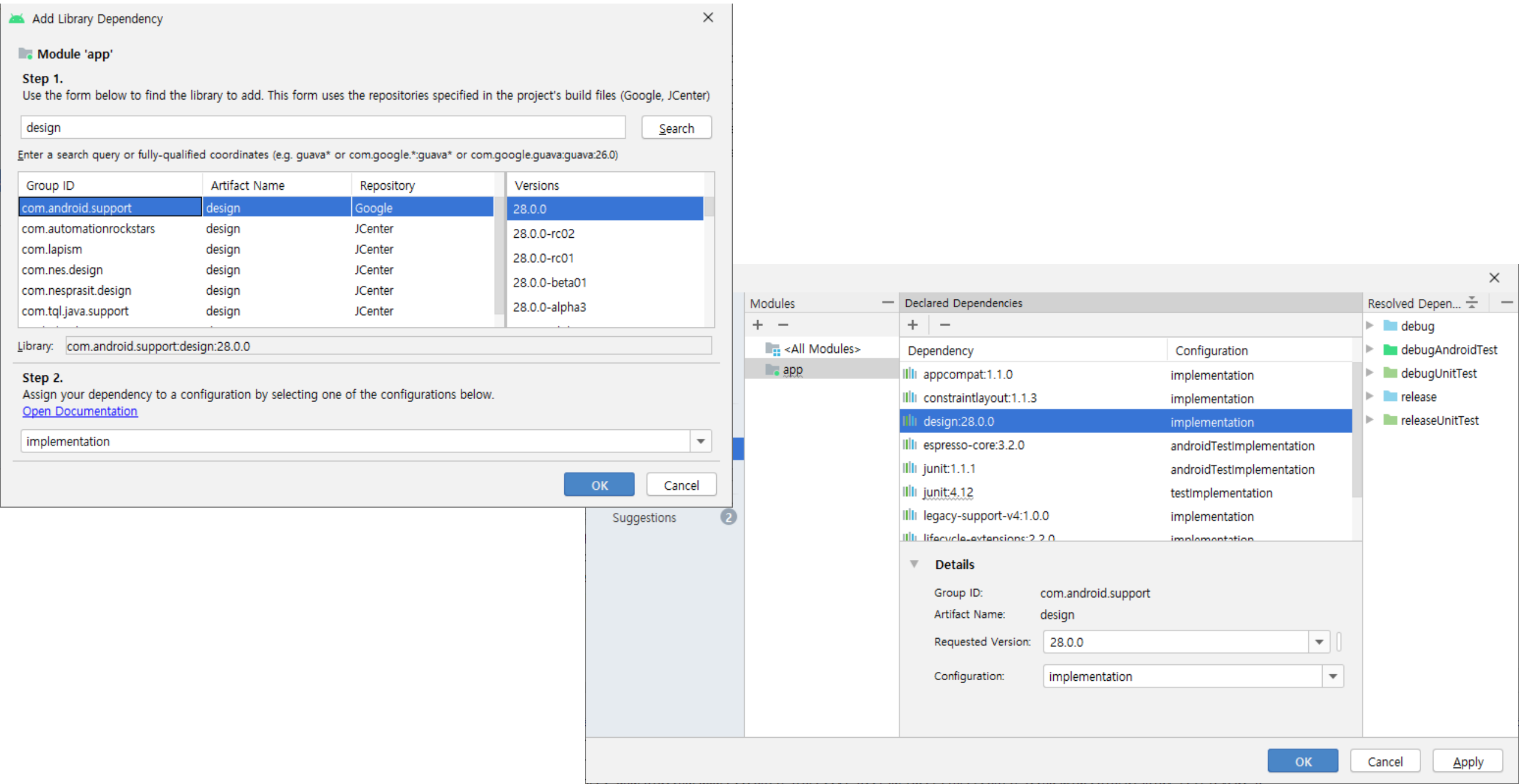


MainActivity.java


```
public class MainActivity extends AppCompatActivity implements ItemFragment.OnListFragmentInteractionListener{

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ViewPager viewPager = findViewById(R.id.pager);
        MyPagerAdapter adapter = new MyPagerAdapter(getSupportFragmentManager());
        viewPager.setAdapter(adapter);

    }

    @Override
    public void onListFragmentInteraction(DummyContent.DummyItem item) {
        Toast.makeText(getApplicationContext(),item.toString(),Toast.LENGTH_SHORT).show();
    }
}
```


File
Edit
View
Navigate
Code
Analyze
Refactor
New
Open...
Profile or debug APK
Open Recent
Close Project
Link C++ Project with Gradle
Settings... Ctrl+Alt+S
Project Structure... Ctrl+Alt+Shift+S
Other Settings
Import Settings...
Export Settings...
Settings Repository...
Export to Zip File...
Convert Module Groups to Qualified Names...
Save All Ctrl+S
Sync Project with Gradle Files
Sync with File System Ctrl+Alt+Y
Invalidate Caches / Restart...
Export to HTML...
Print...
Add to Favorites
File Encoding
Remove BOM
Associate with File Type...
Line Separators
Make File Read-Only
Power Save Mode
Exit
Resource Manager
1: Project
2: Favorites


Project Structure
Project
SDK Location
Variables
Modules
Dependencies
Build Variants
Suggestions 2
Modules
<All Modules>
app
Declared Dependencies
Dependency
Configuration
appcompat:1.1.0 implementation
constraintlayout:1.1.3 implementation
espresso-core:3.2.0 androidTestImplementation
junit:1.1.1 androidTestImplementation
junit:4.12 testImplementation
legacy-support-v4:1.0.0 implementation
lifecycle-extensions:2.2.0 implementation
Details
Group ID: androidx.appcompat
Artifact Name: appcompat
Requested Version: 1.1.0
Configuration: implementation
Resolved Depen...
debug
debugAndroidTest
debugUnitTest
release
releaseUnitTest
OK
Cancel
Apply


Add Library Dependency
Module 'app'
Step 1.
Use the form below to find the library to add. This form uses the repositories specified in the project's build files (Google, JCenter)
design
Search
Enter a search query or fully-qualified coordinates (e.g. guava* or com.google.*:guava* or com.google.guava:guava:26.0)
Group ID
Artifact Name
Repository
Versions
com.android.support
design
Google
28.0.0
com.automationrockstars
design
JCenter
28.0.0-rc02
com.lapism
design
JCenter
28.0.0-rc01
com.nes.design
design
JCenter
28.0.0-beta01
com.nesprasit.design
design
JCenter
28.0.0-alpha3
com.tql.java.support
design
JCenter
Library:
com.android.support:design:28.0.0
Step 2.
Assign your dependency to a configuration by selecting one of the configurations below.
Open Documentation
implementation
OK
Cancel
Suggestions
2
Modules
<All Modules>
app
Declared Dependencies
Dependency
Configuration
appcompat:1.1.0
implementation
constraintlayout:1.1.3
implementation
design:28.0.0
implementation
espresso-core:3.2.0
androidTestImplementation
junit:1.1.1
androidTestImplementation
junit:4.12
testImplementation
legacy-support-v4:1.0.0
implementation
Details
Group ID:
com.android.support
Artifact Name:
design
Requested Version:
28.0.0
Configuration:
implementation
Resolved Depen...
debug
debugAndroidTest
debugUnitTest
release
releaseUnitTest
OK
Cancel
Apply

MainActivity.java | build.gradle (:app) | ItemFragment.java | MyRecyclerViewAdapter.java | MyItemRecyclerViewAdapter.java | fragment_col

Gradle files have changed since last project sync. A project sync may be necessary for the IDE to work properly. Sync Now

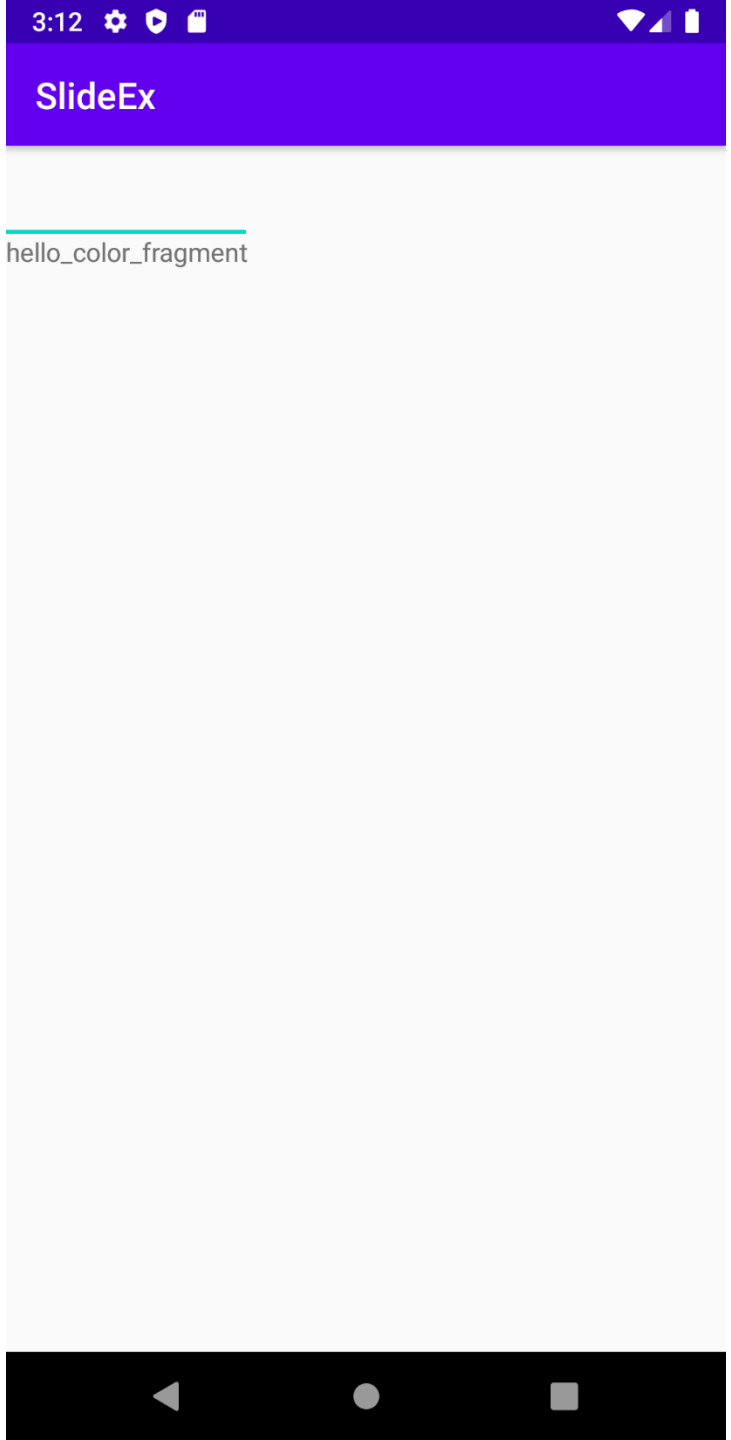
```
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
        }
    }

}

dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])

    implementation 'androidx.appcompat:appcompat:1.1.0'
    implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
    implementation 'androidx.legacy:legacy-support-v4:1.0.0'
    implementation 'androidx.recyclerview:recyclerview:1.0.0'
    implementation 'androidx.lifecycle:lifecycle-extensions:2.2.0'
    testImplementation 'junit:junit:4.12'
    androidTestImplementation 'androidx.test.ext:junit:1.1.1'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.2.0'
    implementation 'com.android.support:design:29.0.3'

}
```

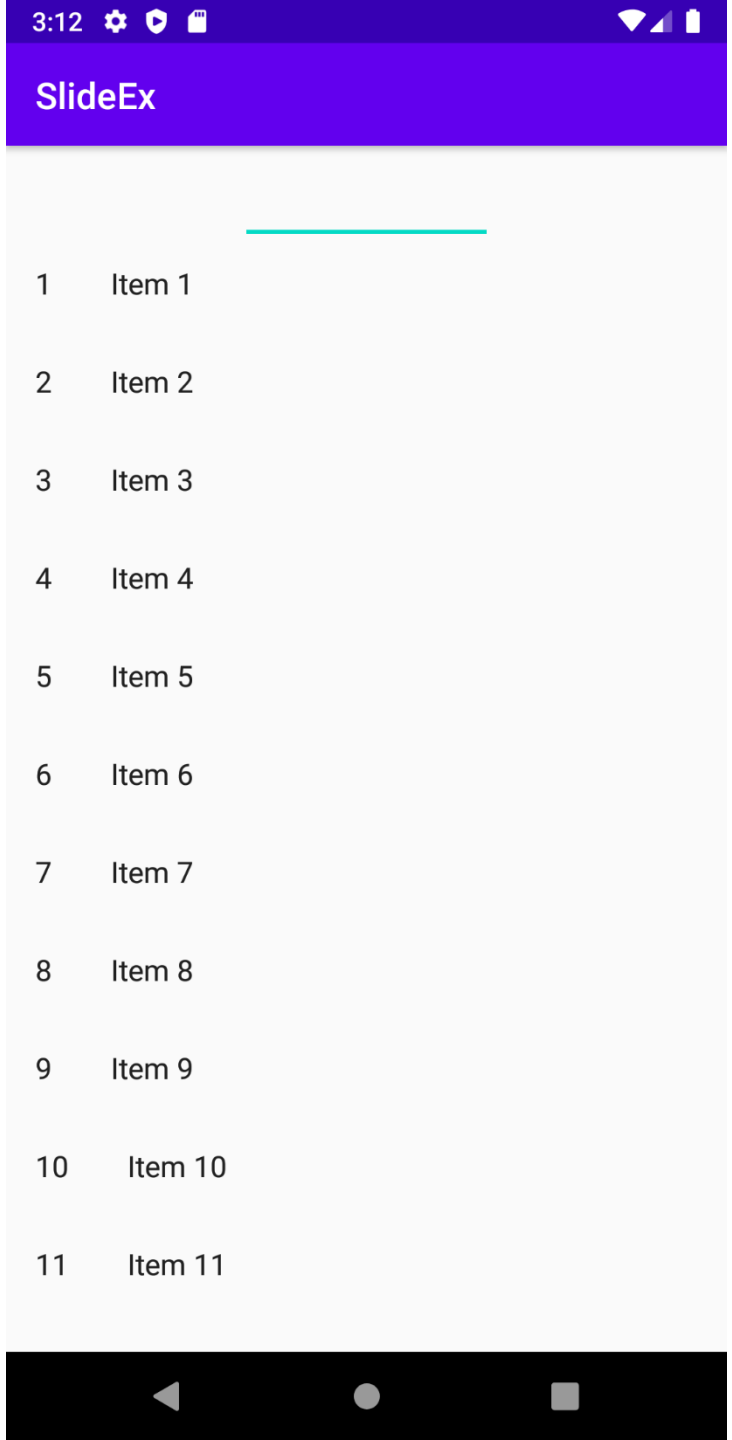
activity_main.xml

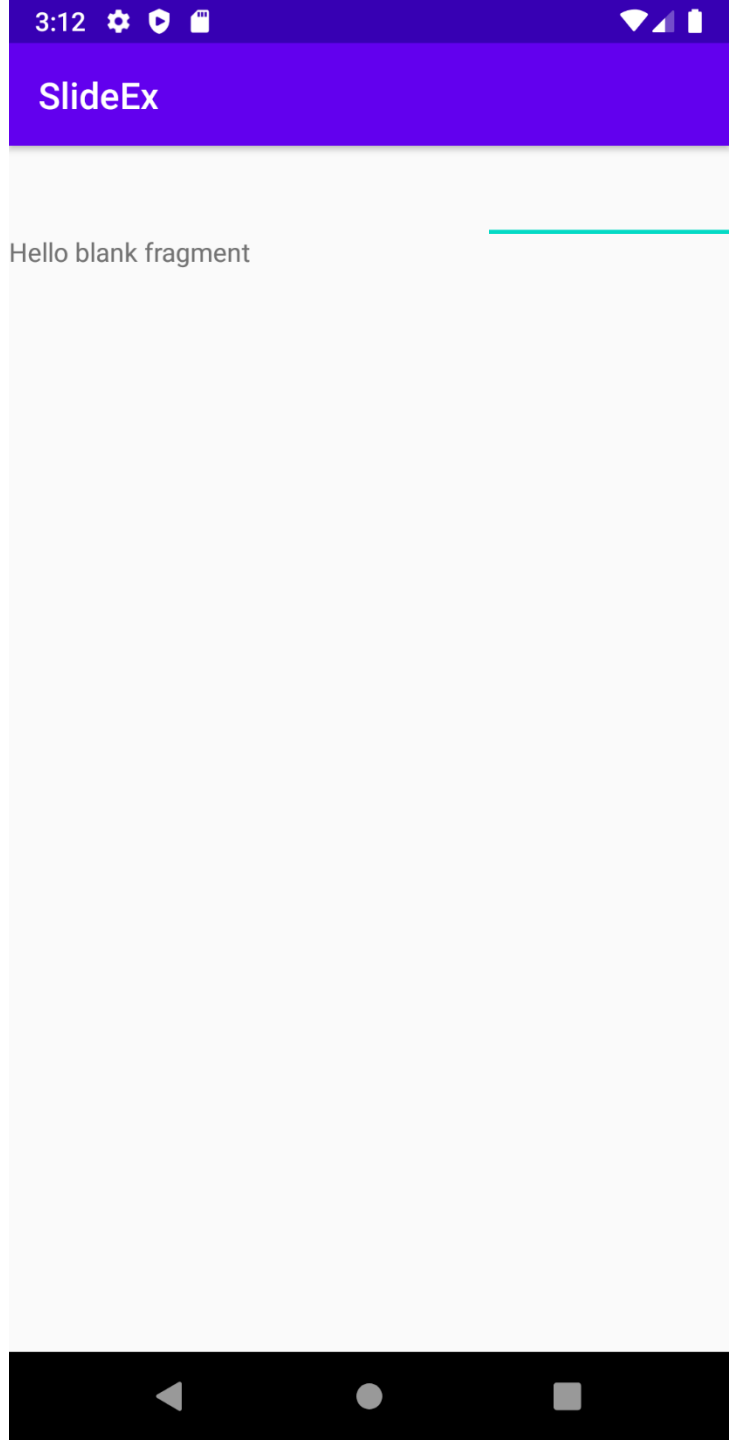

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

    <com.google.android.material.tabs.TabLayout
        android:id="@+id/tab"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:tabSelectedTextColor="#0000ff"
        app:tabTextColor="#ff0000" />

    <androidx.viewpager.widget.ViewPager
        android:id="@+id/pager"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```

MainActivity.java


```
public class MainActivity extends AppCompatActivity implements ItemFragment.OnListFragmentInteractionListener{

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ViewPager viewPager = findViewById(R.id.pager);
        MyPagerAdapter adapter = new MyPagerAdapter(getSupportFragmentManager());
        viewPager.setAdapter(adapter);

        TabLayout tabLayout = findViewById(R.id.tab);
        tabLayout.setupWithViewPager(viewPager);

    }

    @Override
    public void onListFragmentInteraction(DummyContent.DummyItem item) {
        Toast.makeText(getApplicationContext(),item.toString(),Toast.LENGTH_SHORT).show();
    }
}
```

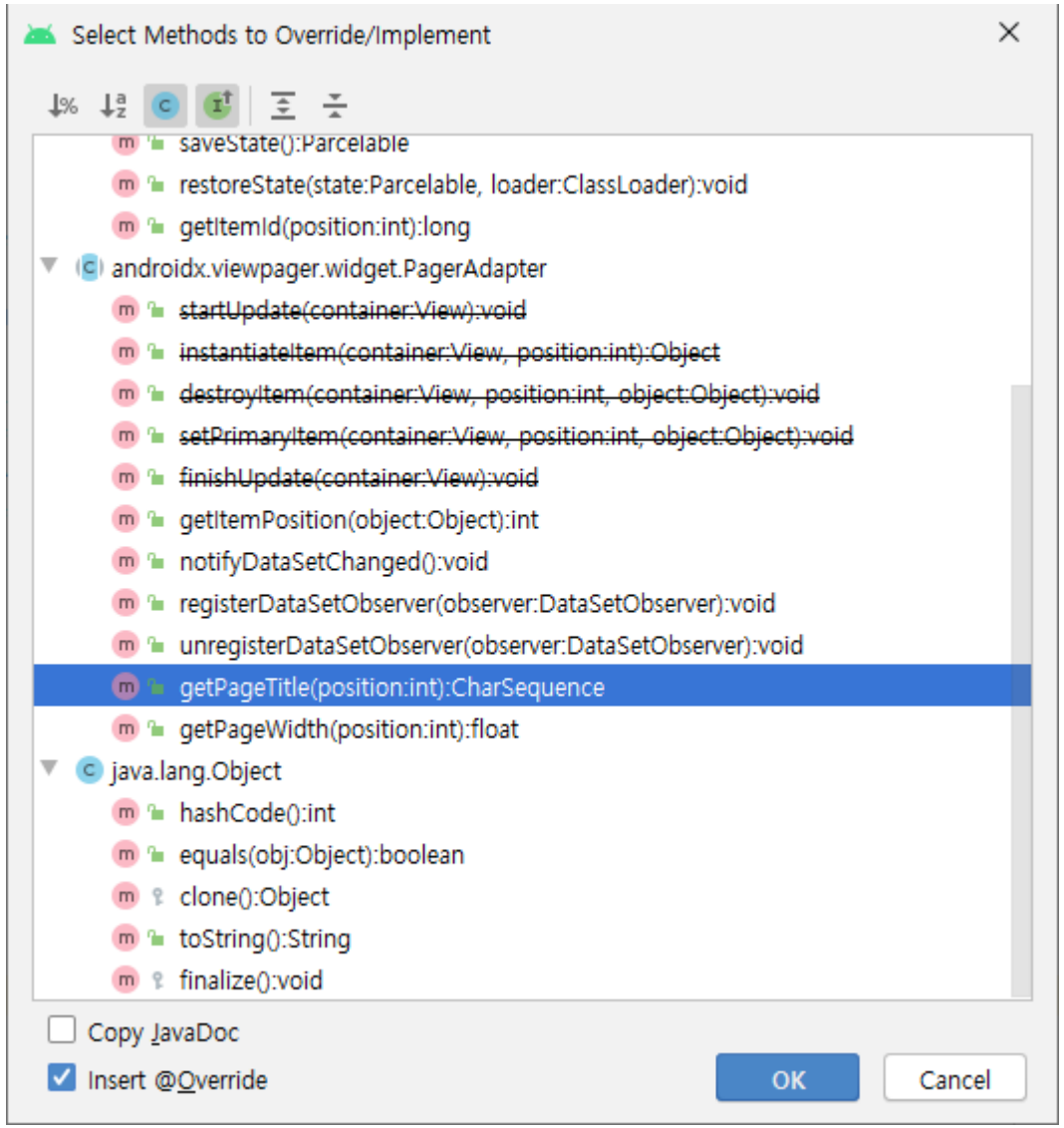

3:12
SlideEx
hello_color_fragment


3:12
SlideEx
1 Item 1
2 Item 2
3 Item 3
4 Item 4
5 Item 5
6 Item 6
7 Item 7
8 Item 8
9 Item 9
10 Item 10
11 Item 11


3:12
SlideEx
Hello blank fragment

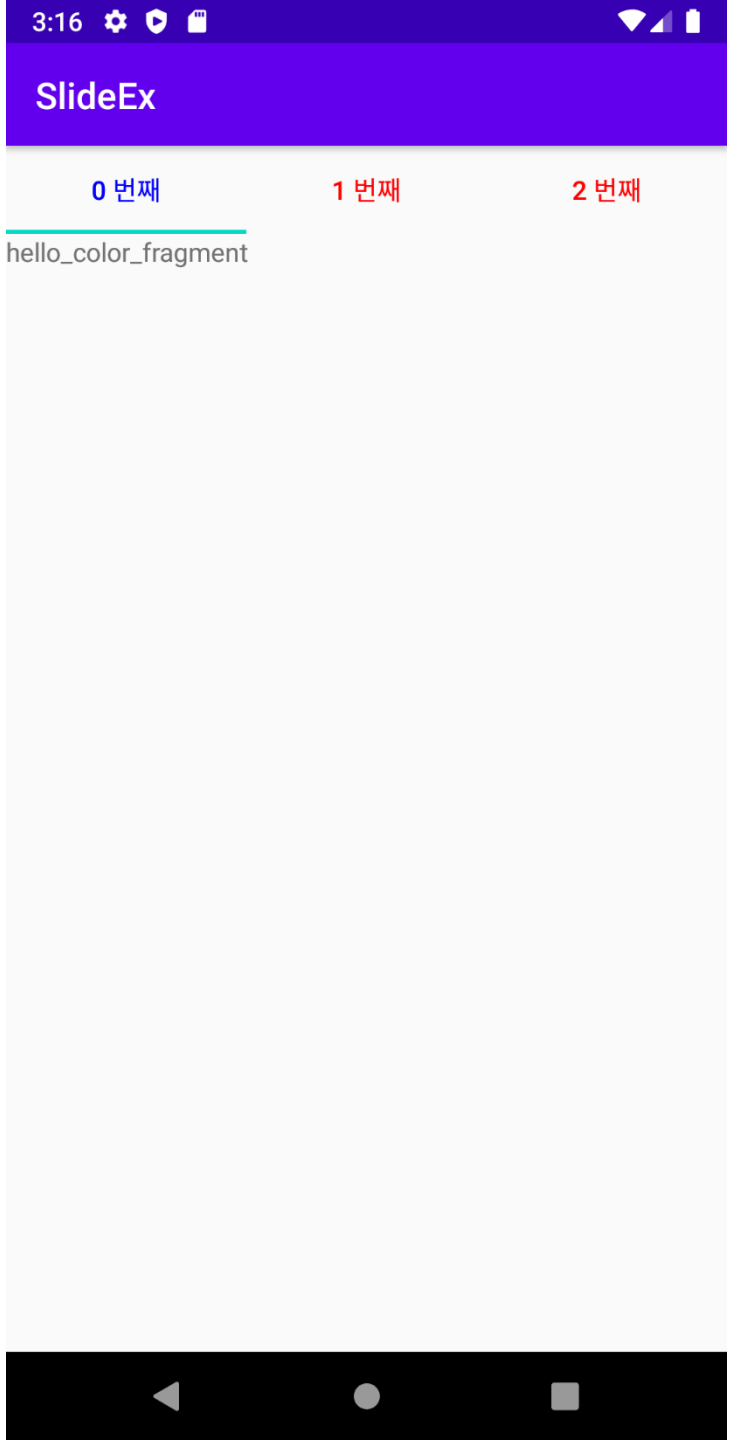
MyPagerAdapter.java

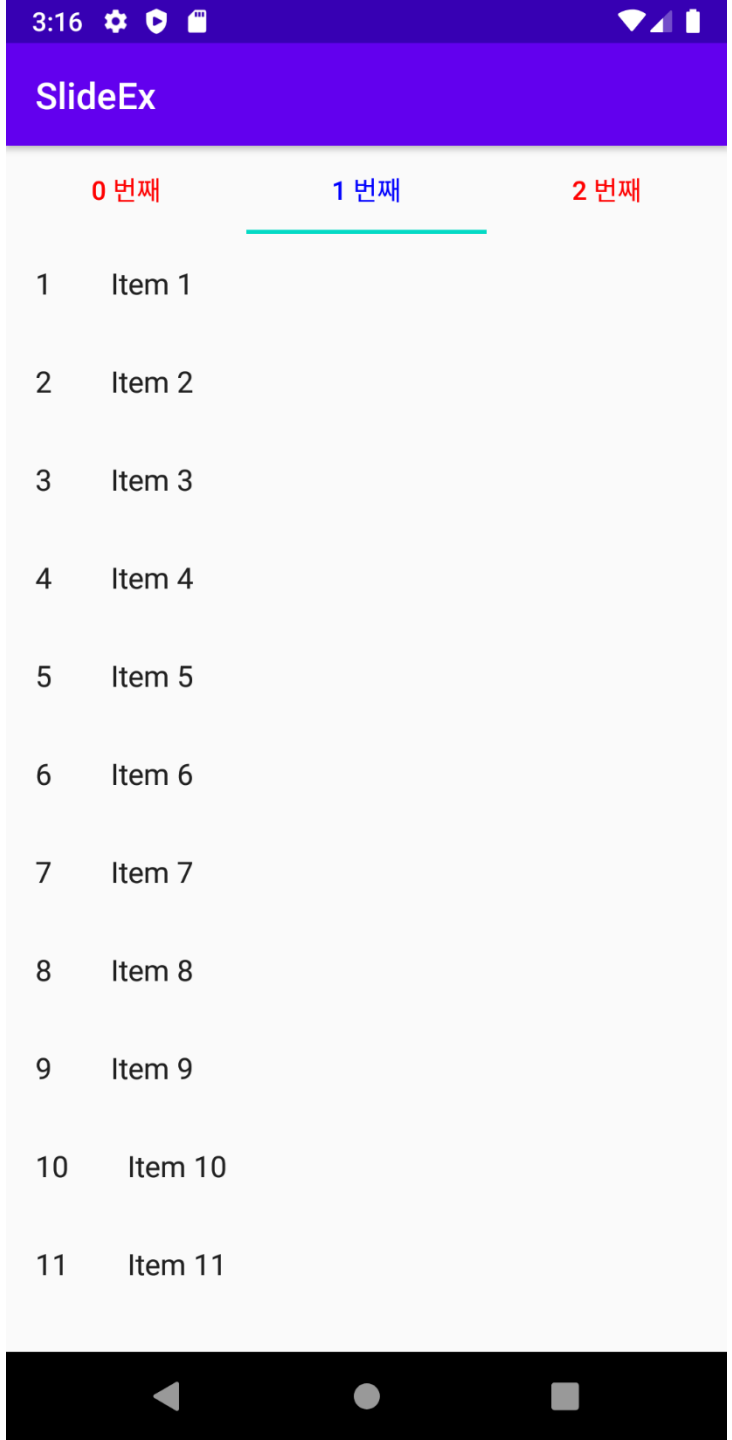

```
@Nullable
@Override
public CharSequence getPageTitle(int position) {
    return super.getPageTitle(position);
}
```

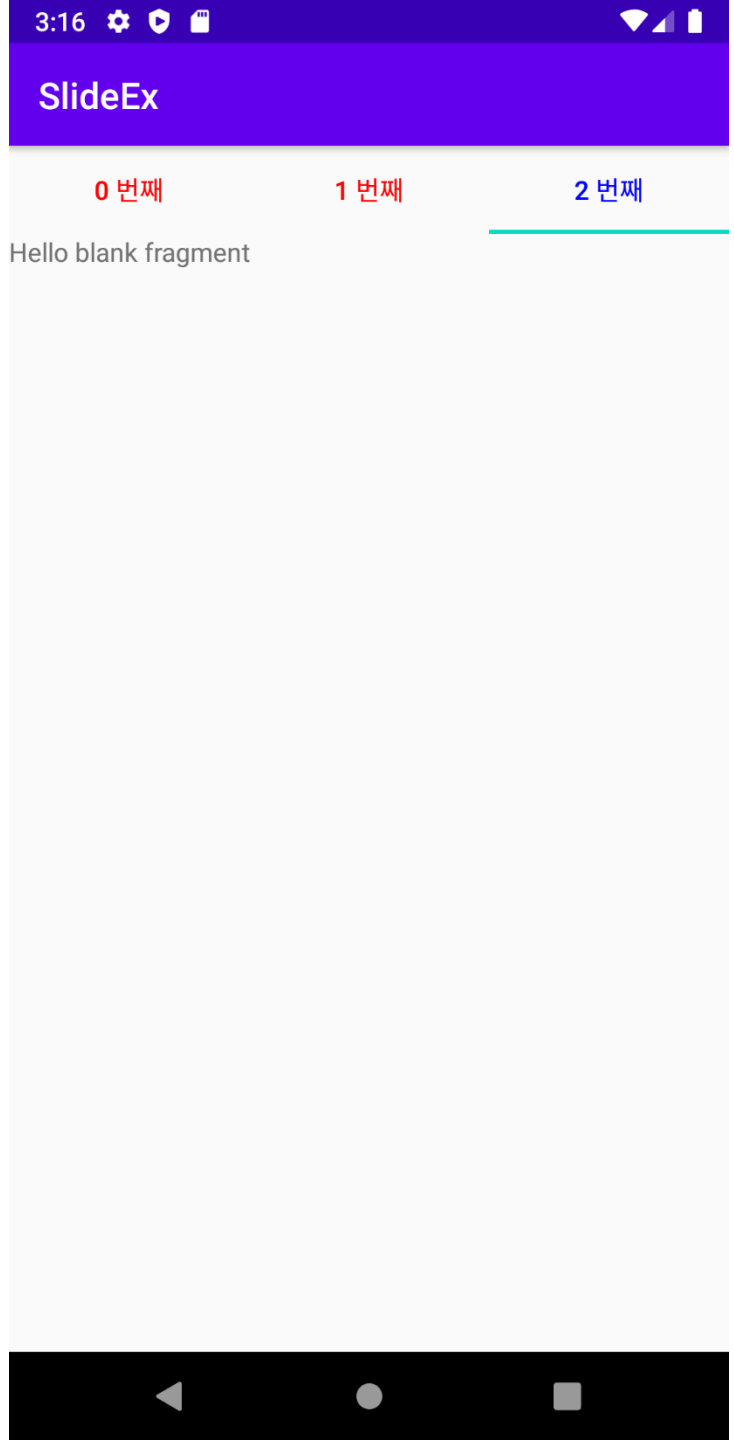


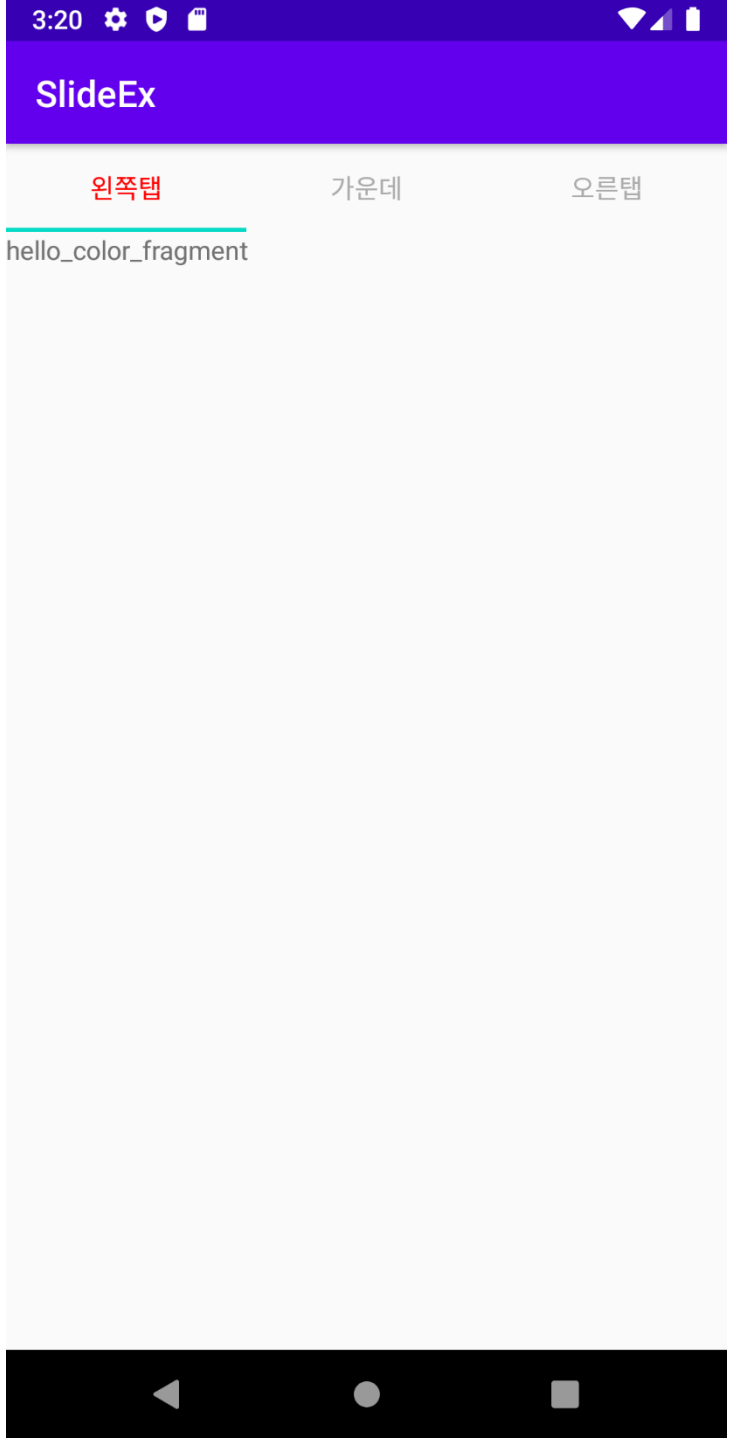
MyPagerAdapter.java

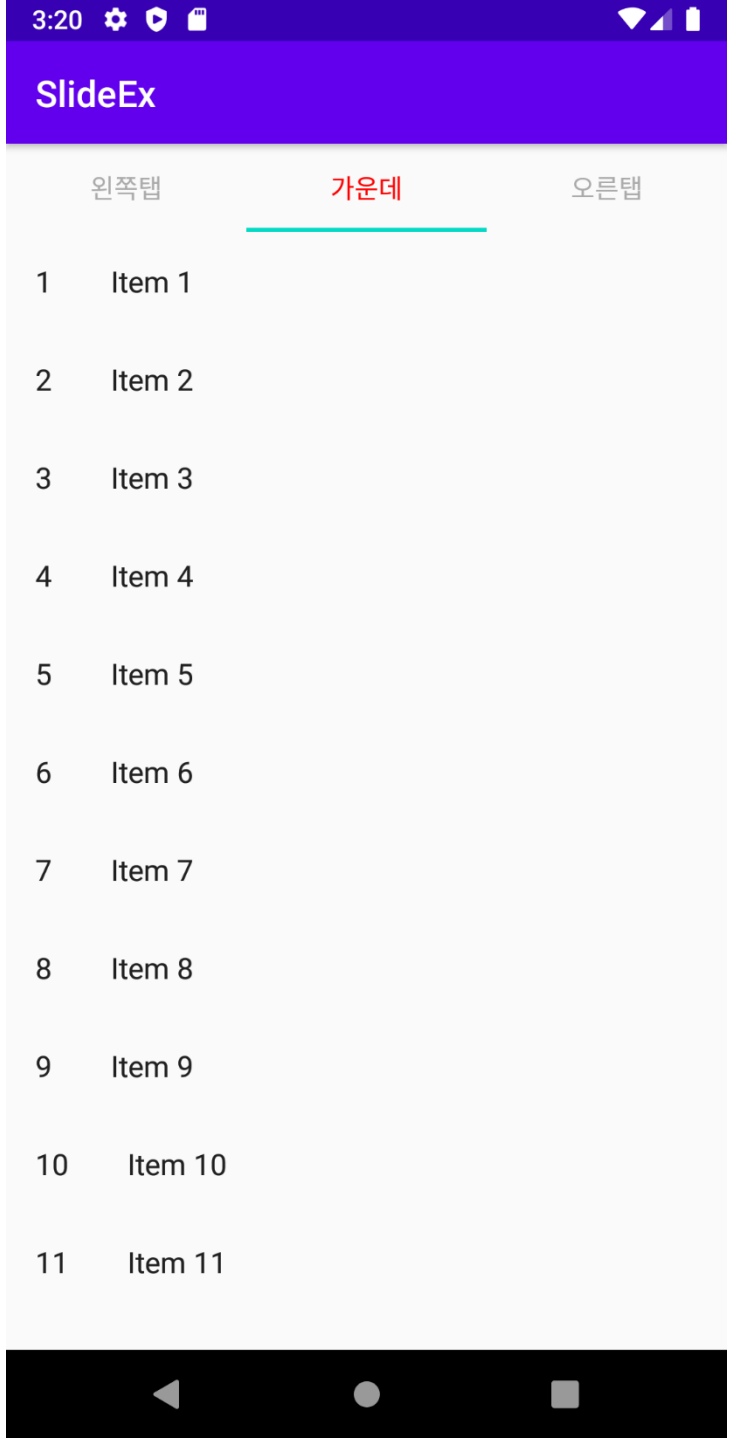

```
public class MyPagerAdapter extends FragmentPagerAdapter {

    private ArrayList<Fragment> mData;
    public MyPagerAdapter(@NonNull FragmentManager fm) {
        super(fm);
        mData = new ArrayList<>();
        mData.add(new ColorFragment());
        mData.add(new ItemFragment());
        mData.add(new BlankFragment());
    }

    @NonNull
    @Override
    public Fragment getItem(int position) {
        return mData.get(position);
    }

    @Override
    public int getCount() {
        return mData.size();
    }

    @Nullable
    @Override
    public CharSequence getPageTitle(int position) {
        return position + " 번째";
    }
```

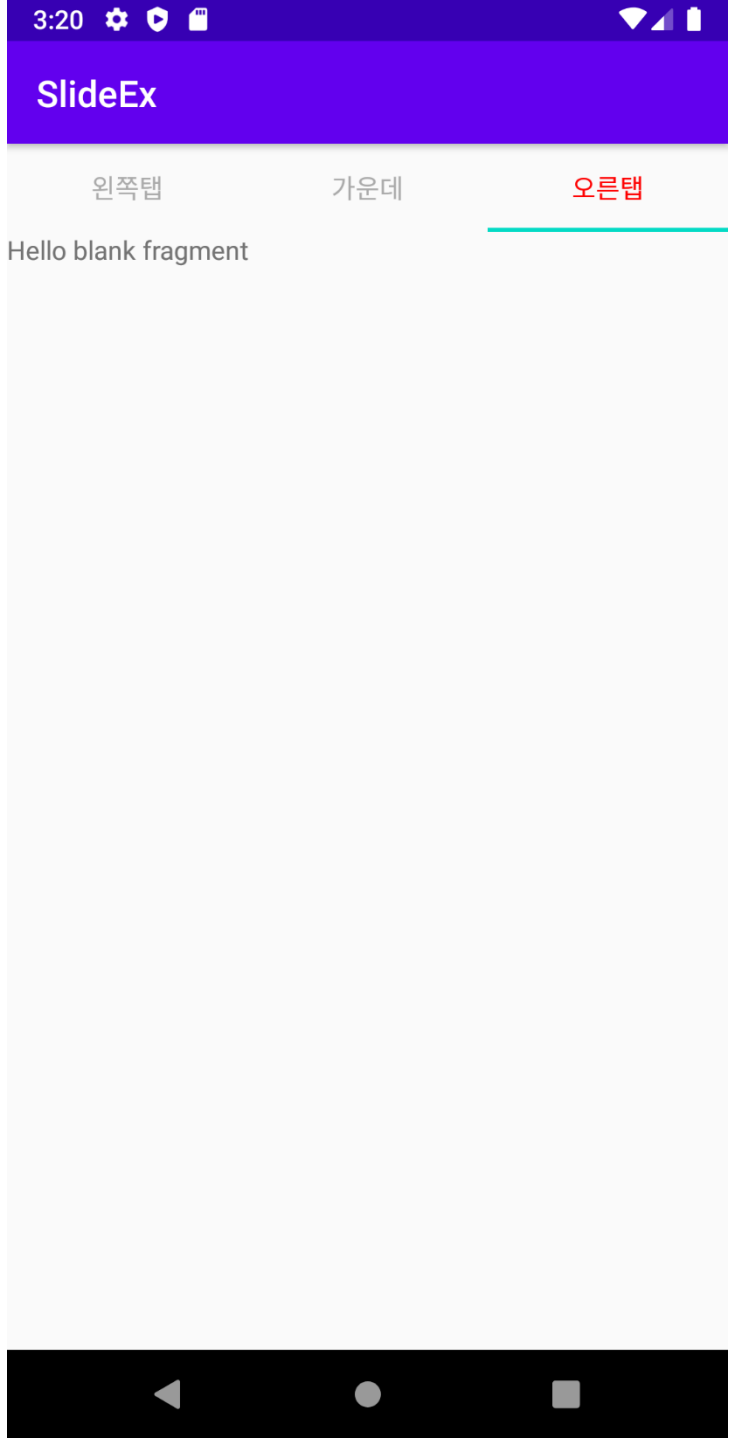

3:16
SlideEx
0 번째
1 번째
2 번째
hello_color_fragment


3:16
SlideEx
0 번째
1 번째
2 번째
1 Item 1
2 Item 2
3 Item 3
4 Item 4
5 Item 5
6 Item 6
7 Item 7
8 Item 8
9 Item 9
10 Item 10
11 Item 11


3:16
SlideEx
0 번째
1 번째
2 번째
Hello blank fragment


3:20
SlideEx
왼쪽탭
가운데
오른탭
hello_color_fragment


3:20
SlideEx
왼쪽탭
가운데
오른탭
1 Item 1
2 Item 2
3 Item 3
4 Item 4
5 Item 5
6 Item 6
7 Item 7
8 Item 8
9 Item 9
10 Item 10
11 Item 11


3:20
SlideEx
왼쪽탭
가운데
오른탭
Hello blank fragment

MyPagerAdapter.java


```
public class MyPagerAdapter extends FragmentPagerAdapter {
    private ArrayList<Fragment> mData;
    String [] tabName = {"왼쪽탭","가운데","오른탭"};
    public MyPagerAdapter(@NonNull FragmentManager fm) {
        super(fm);
        mData = new ArrayList<>();
        mData.add(new ColorFragment());
        mData.add(new ItemFragment());
        mData.add(new BlankFragment());
    }
    @NonNull
    @Override
    public Fragment getItem(int position) {
        return mData.get(position);
    }

    @Override
    public int getCount() {
        return mData.size();
    }

    @Nullable
    @Override
    public CharSequence getPageTitle(int position) {
        return tabName[position];
    }
}
```

activity_main.xml


```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <com.google.android.material.tabs.TabLayout
        android:id="@+id/tab"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:tabSelectedTextColor="#ff0000"
        app:tabTextColor="#AAAAAA" />

    <androidx.viewpager.widget.ViewPager
        android:id="@+id/pager"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```