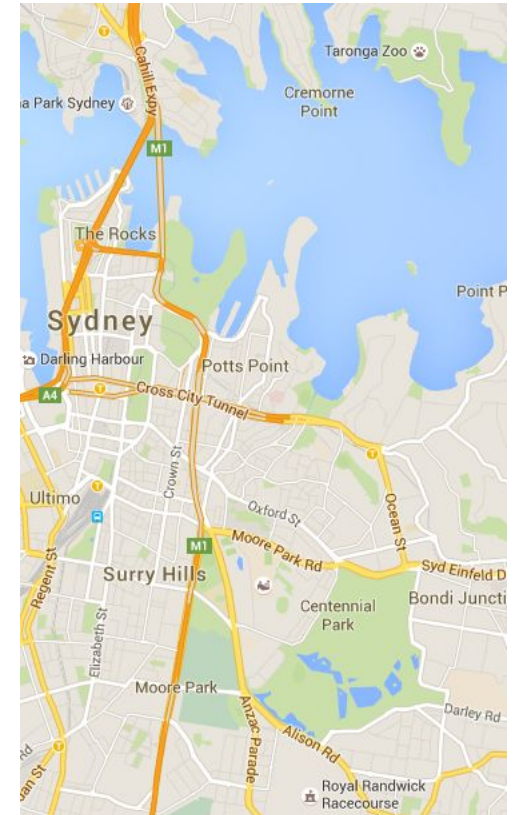
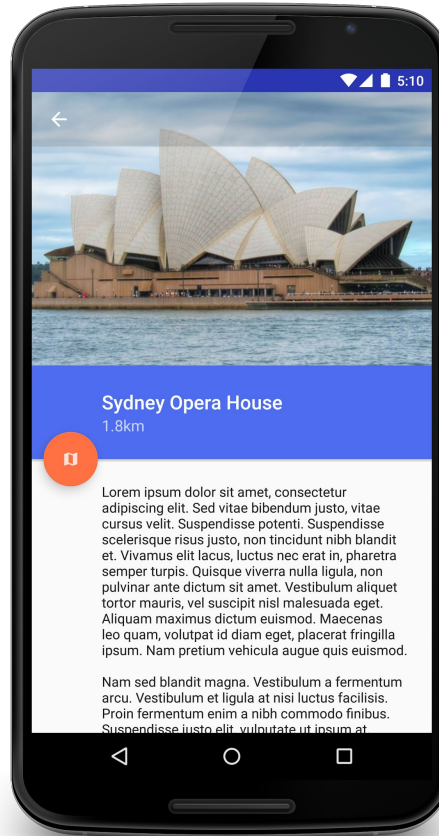
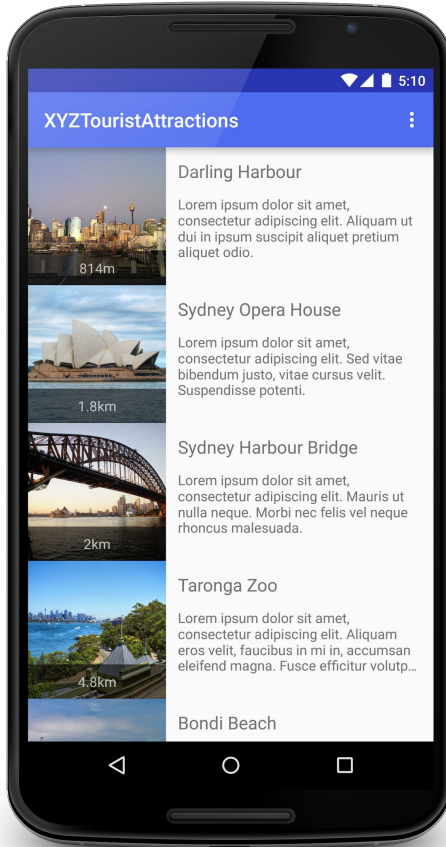


---

**Android App**

**Advanced**

# 최종여행물



---

**1**

**Content Provider**

# MultiMedia File Type

형식	포맷	기록	읽기	지원 형식
오디오	AAC LC/LTP		O	3GPP (.3gp) 및 MPEG-4 (.mp4, .m4a). Raw AAC 미지원 (.aac)
	HE-AACv1 (AAC+)		O	
	HE-AACv2 (enhanced AAC+)		O	
	AMR-NB	O	O	3GPP (.3gp)
	AMR-WB		O	3GPP (.3gp)
	MP3		O	MP3 (.mp3)
	MIDI		O	타입 0/1 (.mid, .xmf, .mxmf). RTTTL/RTX (.rtttl, .rtx), OTA (.ota), iMelody (.imy)
	Ogg Vorbis		O	Ogg (.ogg)
	PCM/Wave		O	WAVE (.wav)
이미지	JPEG	O	O	JPEG (.jpg)
	GIF		O	GIF (.gif)
	PNG		O	PNG (.png)
	BMP		O	BMP (.bmp)
비디오	H.263	O	O	3GPP (.3gp)
	H.264	O	O	3GPP (.3gp) and MPEG-4 (.mp4)
	MPEG4 SP			3GPP (.3gp)

# Try - ImageView From Gallery 구현과 이해

```
// activity_image_view_from_gallery.xml
```

```
<Button ... android:id="@+id/fromGalleryButton" />
```

```
<ImageView ... android:src="@drawable/scene"
    android:id="@+id/imageViewFromGallery" />
```

```
// ImageViewFromGalleryActivity.java → LOAD_IMAGE=101
```

```
public void onClick(View view) {
```

```
    Intent intent = new Intent();
```

```
    intent.setType("image/*");
```

```
    intent.setAction(Intent.ACTION_GET_CONTENT);
```

```
    startActivityForResult(intent, LOAD_IMAGE);
```

```
}
```

```
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
```

```
    if (data != null) {          → need try ~ catch ~
```

```
        Uri selectedImage = data.getData();
```

```
        InputStream inputStream =
```

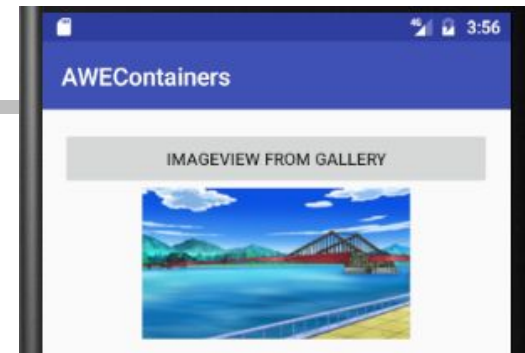
```
        this.getContentResolver().openInputStream(selectedImage);
```

```
        Bitmap bitmap = BitmapFactory.decodeStream(inputStream);
```

```
        imageView.setImageBitmap(bitmap);
```

```
    }
```

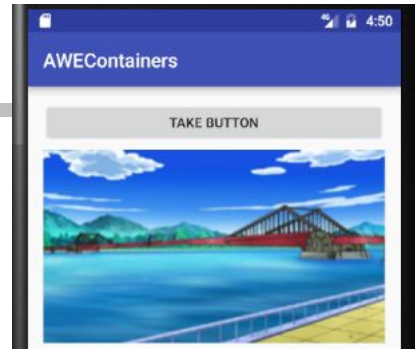
```
}
```



# Try - ImageView(Take) 구현과 이해

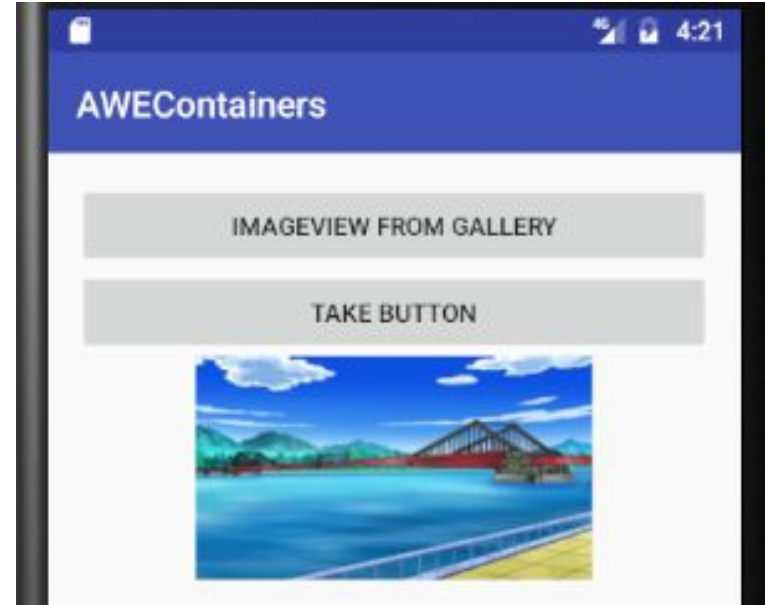
```
// activity_image_view.xml
<Button ... android:id="@+id/imageCaptureButton"/>
<ImageView .. android:id="@+id/imageView" />

// ImageViewActivity.java
public void onClick(View view) {
if(getPackageManager().hasSystemFeature(PackageManager.FEATURE_C
AMERA_ANY)){          → Have Any Camera
    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    startActivityForResult(intent, IMAGE_CAPTURE);
} }
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == IMAGE_CAPTURE) {
        if (resultCode == RESULT_OK) {
            Bundle extras = data.getExtras();
            Bitmap bitmap = (Bitmap) extras.get("data");
            imageView.setImageBitmap(bitmap);
        } else {          Toast.makeText( ... ).show();      }
    }
}
```



# Try - ImageView 구현과 이해

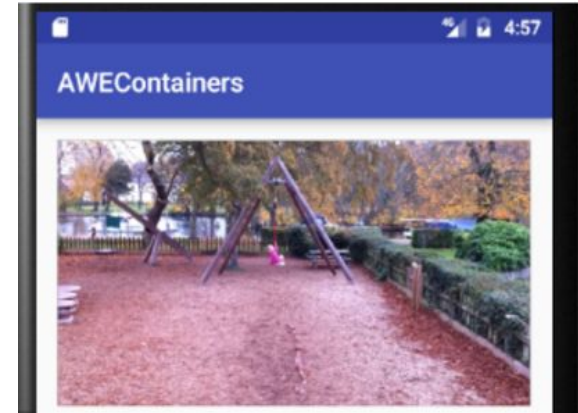
- ❖ 구현 순서
  - 입력 : Button
    - From Gallery
    - From Take Image
  - 출력 : ImageView
- ❖ 해 보기



# Try - VideoView(Simple) 구현과 이해

```
// AndroidManifest.xml
<uses-permission android:name="android.permission.INTERNET" />

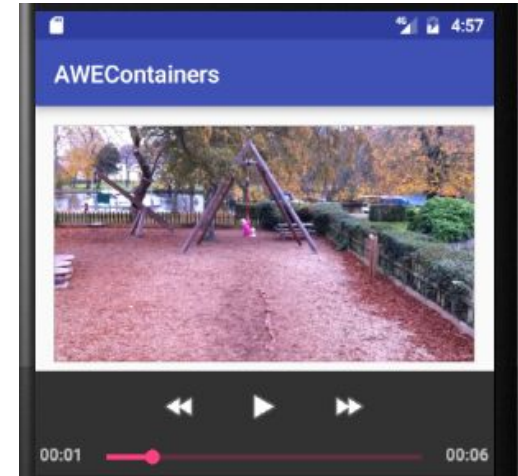
// activity_video_view_simple.xml
<VideoView ...
    android:id="@+id/videoView" />
// VideoViewSimpleActivity.java
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_video_view_simple);
    VideoView videoView = (VideoView) findViewById(R.id.videoViewSimple);
    String videoPath = "http://localhost:5000/static/Armbot.mp4";
    Uri videoUri = Uri.parse(videoPath);
    videoView.setVideoURI(videoUri);
    videoView.start();
}
```





# Try - VideoView(MediaCotroller) 구현과 이해

```
// AndroidManifest.xml
<uses-permission android:name="android.permission.INTERNET" />
// activity_video_view_mediacontroller.xml
<VideoView ...
    android:id="@+id/videoView" />
// VideoViewMediaControllerActivity.java
VideoView videoView;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_video_view);
    videoView = (VideoView) findViewById(R.id.videoView);
    String videoPath = "http://localhost:5000/static/Armbot.mp4";
    Uri videoUri = Uri.parse(videoPath);
    videoView.setVideoURI(videoUri);
    MediaController mediaController = new MediaController(this);
    mediaController.setAnchorView(videoView);
    videoView.setMediaController(mediaController);
    videoView.start();
}
```



# Try - VideoView(Gallery) 구현과 이해

// AndroidManifest.xml → 생략 가능.

```
<uses-permission
```

```
android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

// activity\_video\_view\_from\_gallery.xml

```
<Button ... android:id="@+id/videoViewFromGalleryButton" />
```

```
<VideoView ... android:id="@+id/videoView" />
```

// VideoViewFromGalleryActivity.java → Apply MediaController

```
VideoView videoView = (VideoView)
```

```
findViewById(R.id.videoViewFromGallery);
```

```
public void onClick(View view) {
```

```
    Intent intent = new Intent();
```

```
    intent.setType("video/*"); intent.setAction(Intent.ACTION_GET_CONTENT);
```

```
    startActivityForResult(intent, 102);
```

```
}
```

```
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
```

```
    if (data != null) {
```

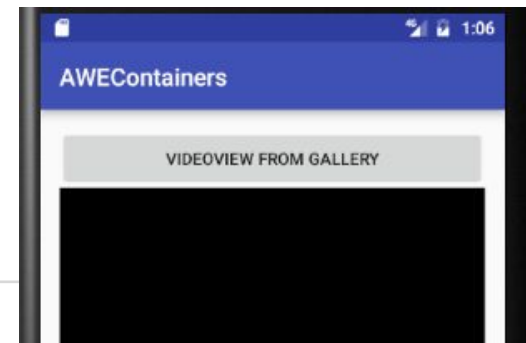
```
        String videoPath = data.getData().toString();
```

```
        videoView.setVideoPath(videoPath);
```

```
        videoView.start();
```

```
    }
```

```
}
```

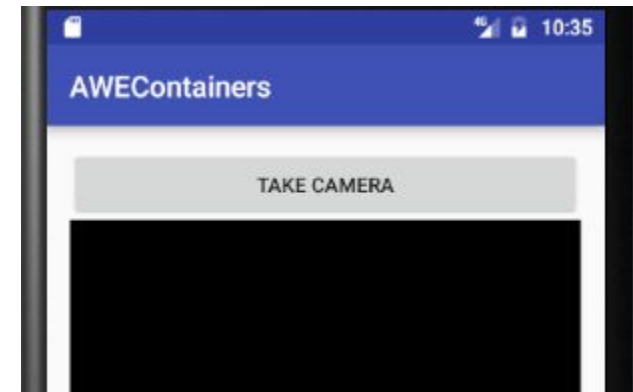


# Try - Take Video 구현과 이해

```
// AndroidManifest.xml
<uses-permission ...="android.permission.WRITE_EXTERNAL_STORAGE" />

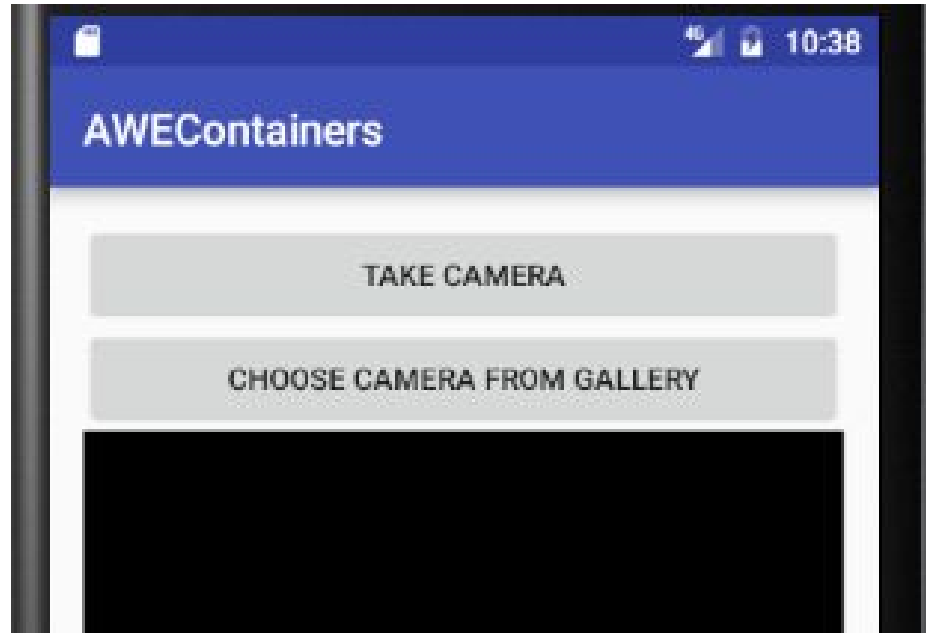
// VideoViewTakeCameraActivity.java
public void onClick(View view) {
    if(getPackageManager().hasSystemFeature(PackageManager.FEATURE_CAMERA_ANY)){
        Intent intent = new Intent(MediaStore.ACTION_VIDEO_CAPTURE);
        startActivityForResult(intent, 201);
    }
}

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (resultCode == RESULT_OK) {
        Uri videoUri = data.getData();
        Toast.makeText(this, "" + videoUri, ...
        videoView.setVideoURI(videoUri);
        videoView.start();
    }
}
```



# Try - VideoView 구현과 이해

- ❖ 구현 순서
  - 입력 : Button
    - From Gallery
    - From Take Image
  - 출력 : ImageView
- 해 보기

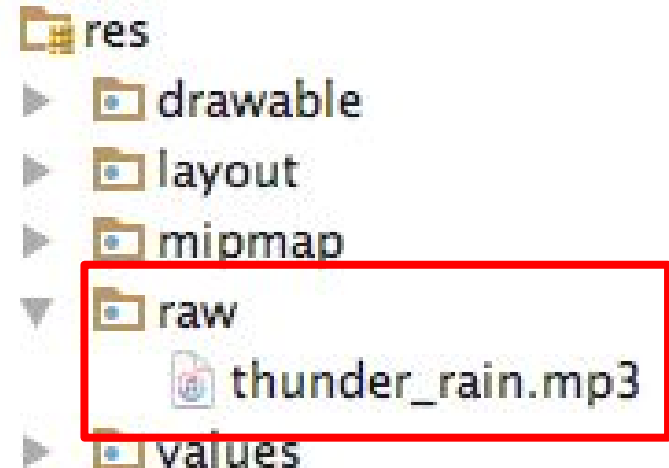
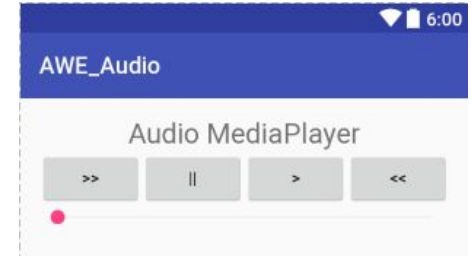


# 암시적 인텐트 필터

요소명	Category	
속성	XML	설명
CATEGORY_DEFAULT	android.intent.category.DEFAULT	디폴트 카테고리
CATEGORY_BROWSABLE	android.intent.category.BROWSABLE	타겟 액티비티는 링크에 참조되는 데이터를 보여 주기 위해 브라우저에 의해 호출될 수 있음
CATEGORY_ALTERNATIVE	android.intent.category.ALTERNATIVE	데이터와 관련된 액티비티들을 의미
CATEGORY_SELECTED_ALTERNATIVE	android.intent.category.SELECTED_ALTERNATIVE	사용자가 선택한 데이터에 또 다른 선택액션으로 고려 되는 액티비티
CATEGORY_TAB	android.intent.category.TAB	TabActivity를 갖는 Tab으로써 사용
CATEGORY_LAUNCHER	android.intent.category.LAUNCHER	호출되고 보여줄수 있는 액티비티
CATEGORY_INFO	android.intent.category.INFO	애플리케이션 리스트에 "CATEGORY_LAUNCHER"가 아닌 패키지에 대한 정보를 공급해 달라는 의미
CATEGORY_HOME	android.intent.category.HOME	디바이스가 부팅 완료 후 처음 작동하는 액티비티
CATEGORY_PREFERENCE	android.intent.category.PREFERENCE	선호하는 패널(panel)의 액티비티
CATEGORY_DEVELOPMENT_PREFERENCE	android.intent.category.DEVELOPMENT_PREFERENCE	지정한 액티비티가 개발용 패널임을 의미
CATEGORY_EMBED	android.intent.category.EMBED	임베디드 액티비티를 작동
CATEGORY_MONKEY	android.intent.category.MONKEY	테스트 도구(몽키-monkey)에 의해 작동하는 액티비티
CATEGORY_TEST	android.intent.category.TEST	테스트용
CATEGORY_UNIT_TEST	android.intent.category.UNIT_TEST	단위 테스트로 사용

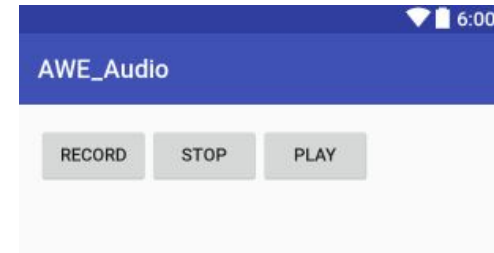
# Try - MediaPlayer 구현과 이해

```
// AndroidManifest.xml
<uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.RECORD_AUDIO" />
// AudioMediaPlayerActivity.java
protected void onCreate(Bundle savedInstanceState) { ...
    play = (Button) findViewById(R.id.buttonPlay);
    stop = (Button) findViewById(R.id.buttonStop);
    mediaPlayer = MediaPlayer.create(this, R.raw.thunder_rain);
}
public void onClickPlay(View v) {
    mediaPlayer.start();    play.setEnabled(true);
}
public void onClickStop(View v) {
    mediaPlayer.pause();
    stop.setEnabled(false); play.setEnabled(true);
}
```



# Try - Audio Record 구현과 이해

```
// AudioSimpleActivity.java
View play,stop,record;      MediaRecorder myAudioRecorder;
String outputFile = null;
protected void onCreate(Bundle savedInstanceState) {
    stop.setEnabled(false);  play.setEnabled(false);
    outputFile = Environment.getExternalStorageDirectory().getAbsolutePath() +
"/recording.3gp";           → try recording.mp3, OutputFormat.MPEG_4
    myAudioRecorder=new MediaRecorder();
    myAudioRecorder.setAudioSource(MediaRecorder.AudioSource.MIC);
    myAudioRecorder.setOutputFormat(MediaRecorder.OutputFormat.THREE_GPP);
    myAudioRecorder.setAudioEncoder(MediaRecorder.OutputFormat.AMR_NB);
    myAudioRecorder.setOutputFile(outputFile);    }
public void onClickRecord(View v) {
    myAudioRecorder.prepare(); myAudioRecorder.start();
    record.setEnabled(false); stop.setEnabled(true);    }
public void onClickStop(View v) {
    stop.setEnabled(false);  play.setEnabled(true);
    myAudioRecorder.stop(); myAudioRecorder.release(); myAudioRecorder=null; }
public void onClickPlay(View v) {
MediaPlayer m = new MediaPlayer();    m.setDataSource(outputFile);  m.start(); }
```



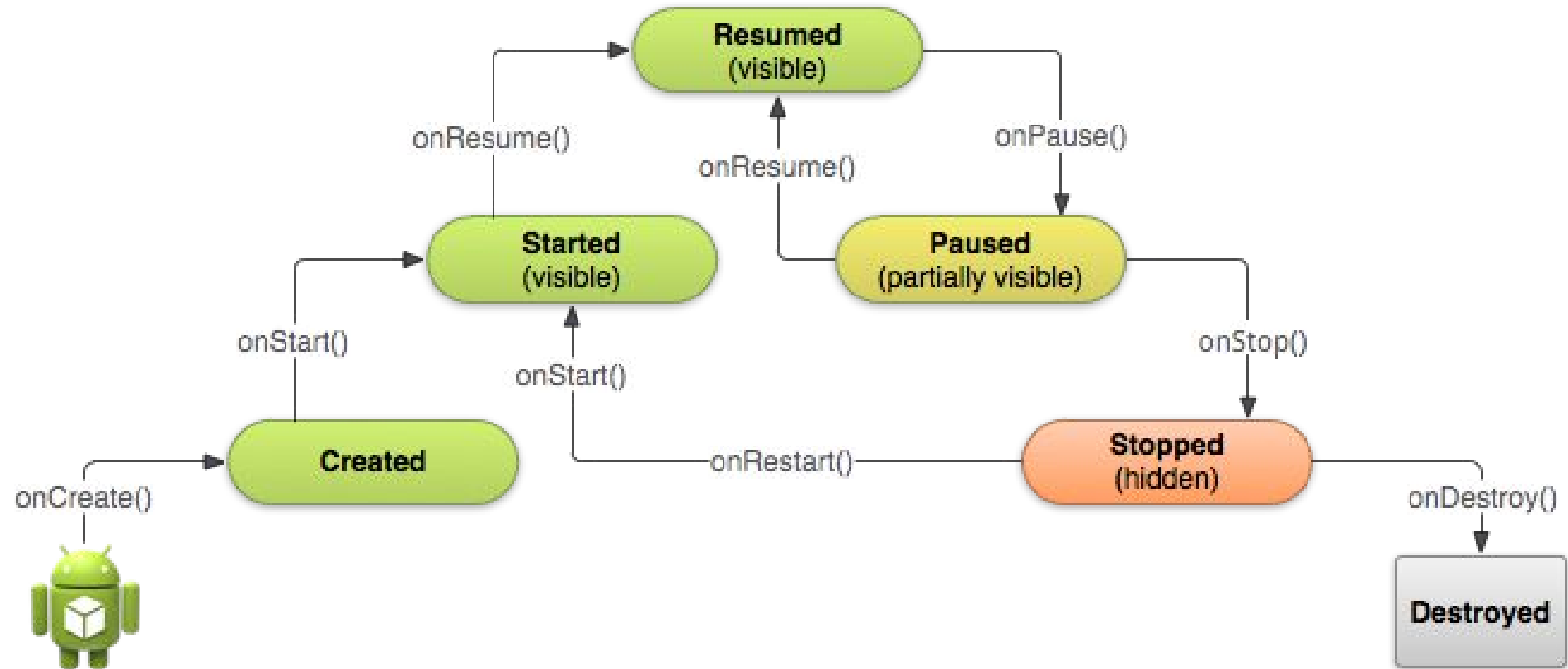
---

**2**

## **Activity Life Cycle**



# Activity Life Cycle



# Try - Activity Life Cycle 구현과 이해

## ❖ 구현 순서

- Second Activity, Third Activity 작성과 상호 이동
- LogCat 활용 이해.

## ❖ 따라해 보기

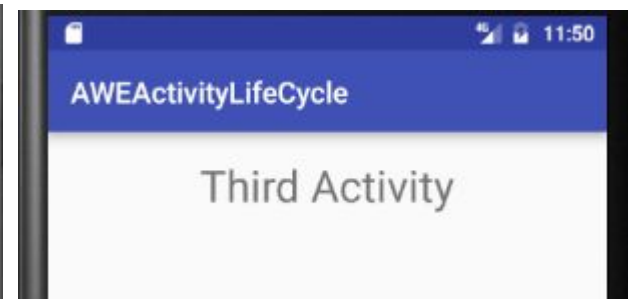
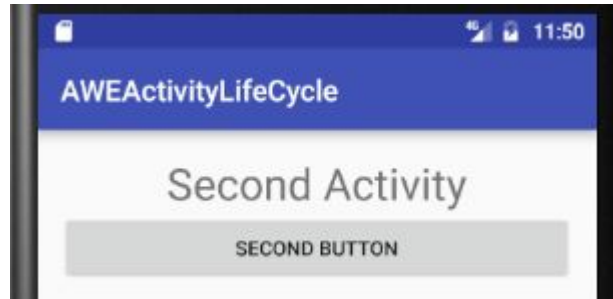
```
final String TAG = "States";          final String ACTIVITY = "MainActivity:";
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState); setContentView(R.layout.activity_main);}
@Override
protected void onRestart() { super.onRestart(); }
@Override
protected void onStart() { super.onStart(); ... }
@Override
protected void onResume() { super.onResume(); ... }
@Override
protected void onPause() { super.onPause(); ...}
@Override
protected void onStop() { super.onStop(); ... }
@Override
protected void onDestroy() { super.onDestroy(); ... }
```

# Try - Activity Life Cycle간 구현과 주기 이해

## ❖ 구현 순서

- `final String TAG = "States";`      `final String ACTIVITY = "MainActivity:";`
- `Log.d(TAG, ACTIVITY+" onRestart());`
- 중요 `@Override` 구현
  - `protected void onCreate(Bundle savedInstanceState)`
  - `protected void onRestart()`
  - `protected void onStart()`
  - `protected void onResume()`
  - `protected void onPause()`
  - `protected void onStop()`
  - `protected void onDestroy()`

## ❖ 해 보기



---

**3**

**Fragment**

# Try - Dynamic Inflation Layout 구현과 이해

```
// activity_dynamicinflation_layout.xml
```

```
<LinearLayout ...  
    android:orientation="vertical"  
    android:id="@+id/dynamicInfaltionId"
```

```
<Button ...  
</LinearLayout>
```

```
// DynamicInflationActivity.java
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    View inflaterView = (View)
```

```
getLayoutInflater().inflate(R.layout.activity_dynamicinflation_layout, null);
```

```
    LinearLayout linearLayout = (LinearLayout)
```

```
inflaterView.findViewById(R.id.dynamicInfaltionId);
```

```
    Button button = new Button(this);
```

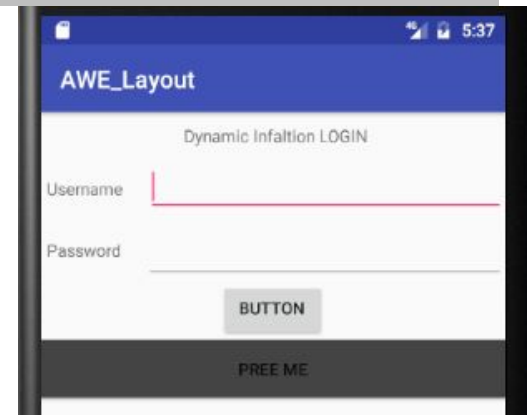
```
    button.setText("Press Me");
```

```
    button.setBackgroundColor(Color.DKGRAY);
```

```
    linearLayout.addView(button);
```

```
    setContentView(linearLayout);
```

```
}
```



# Try - XML Fragment Inflation 구현과 이해

```
// fragment_xml_fragment_child.xml
```

```
<LinearLayout ... >
```

```
    <TextView .../>
```

```
</LinearLayout>
```

```
// XmlFragmentChild.java
```

```
public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {  
    return inflater.inflate(R.layout.fragment_xml_fragment_child, container, false);  
}
```

```
// activity_xml_fragment_mother.xml
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent" >
```

```
    <TextView android:id="@+id/text1" android:layout_width="wrap_content"  
        android:layout_height="wrap_content" android:text="XML Fragment Mother Activity" />
```

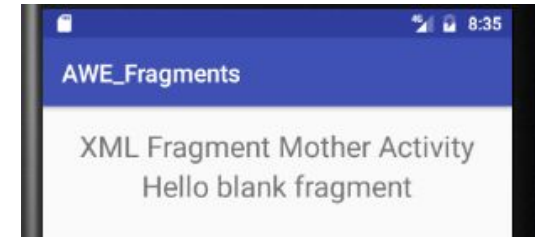
```
    <include android:id="@+id/fragment_child" android:layout_width="wrap_content"  
        android:layout_height="wrap_content" android:layout_margin="10dp" />
```

```
    <include android:id="@+id/fragment_child" android:layout_width="wrap_content"  
        android:layout_height="wrap_content" android:layout_margin="10dp" />  
</LinearLayout>
```

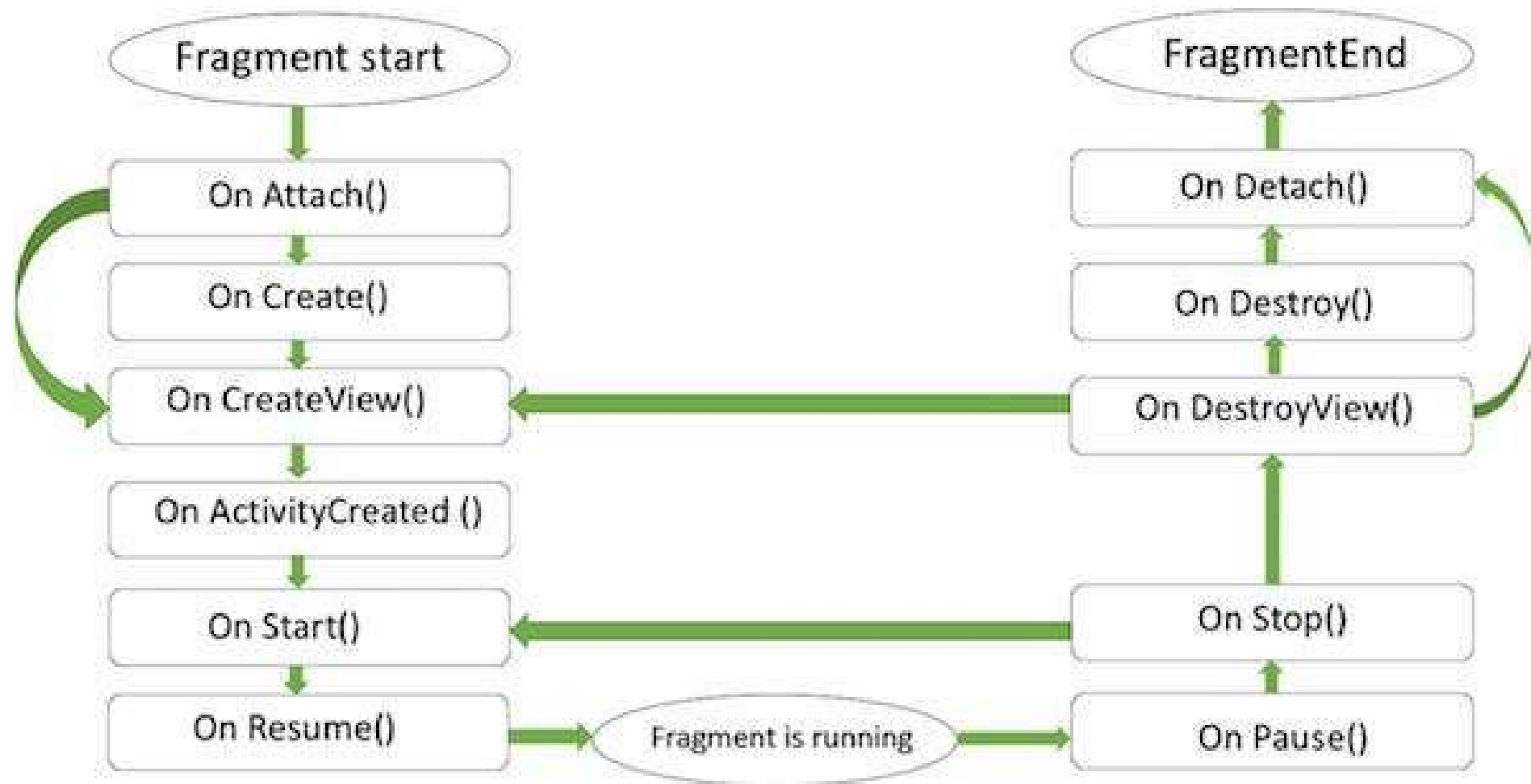
```
</LinearLayout>
```

```
// XmlFragmentMotherActivity.java
```

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_xml_fragment_mother);  
}
```



# Fragment Life Cycle



# Try - Code Fragment Inflation 구현과 이해

```
// fragment_xml_fragment_child.xml
```

```
<LinearLayout ... >
```

```
    <TextView .../>
```

```
</LinearLayout>
```

```
// XmlFragmentChild.java
```

```
public View onCreateView(LayoutInflater inflater, ViewGroup con ... ceState) {  
    return inflater.inflate(R.layout.fragment_xml_fragment_child, container, false);  
}
```

```
// activity_code_fragment_mother.xml
```

```
<LinearLayout xm...>
```

```
    <TextView ... android:text="XML Fragment Mother Activity" />
```

```
    <LinearLayout ... android:id="@+id/codeFragmentLayout"/>
```

```
</LinearLayout>
```

```
// CodeFragmentMotherActivity.java
```

```
protected void onCreate(Bundle savedInstanceState) { ...
```

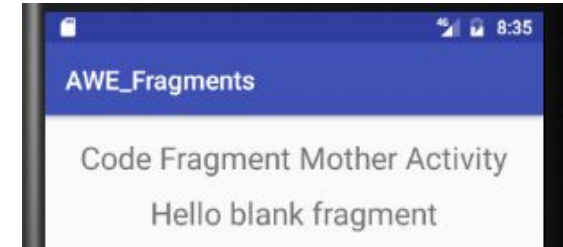
```
    FragmentManager fragmentManager = getSupportFragmentManager();
```

```
    FragmentTransaction fragmentT=fragmentManager.beginTransaction();
```

```
    fragmentT.replace(R.id.codeFragmentLayout, new XmlFragmentChild());
```

```
    fragmentTransaction.commit();
```

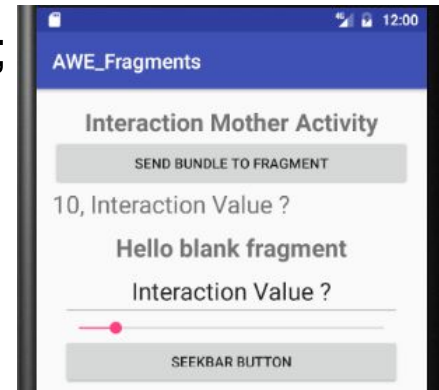
```
}
```





## Try - Fragment(Bundle From Activity) 구현과 이해

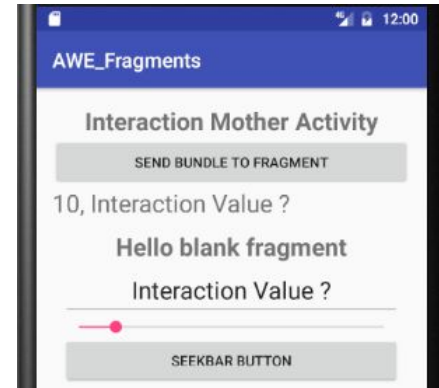
```
// fragment_bundle_simple.xml      ...
// BundleSimpleFragment.java → extends Fragment
public View onCreateView(LayoutInflater inflater, ViewGroup ...) {
    View view = inflater.inflate(R.layout.fragment_bundle_simple, container, false);
    seekBarName = (EditText) view.findViewById(R.id.editText);
    Bundle bundle = this.getArguments();
    seekBarName.setText(bundle.getString("interactionValue"));
}
// activity_bundle_fragment_mother_with.xml      ...
// BundleFragmentMotherWithActivity.java
public void onClick(View view){
    bundleSimpleFragment = new BundleSimpleFragment();
    Bundle bundle = new Bundle();
    bundle.putString("interactionValue", interactionValue.getText().toString());
    bundleSimpleFragment.setArguments(bundle);
    FragmentTransaction transaction =
getSupportFragmentManager().beginTransaction();
    transaction.replace(R.id.bundle_fragment, bundleSimpleFragment);
    transaction.addToBackStack(null);      → Try remove & click back button
    transaction.commit();
}
```



# Try - Fragment(update Fragment) 구현과 이해

```
// MainActivity.java
public void onClick(View view){
    bundleSimpleFragment = (BundleSimpleFragment)
    getSupportFragmentManager().findFragmentById(R.id.bundle_fragment);
    if(bundleSimpleFragment != null){
        bundleSimpleFragment.updateArticleView(interactionValue.getText().toString());
    } else {
        bundleSimpleFragment = new BundleSimpleFragment();
        ...
        transaction.commit();
    }
}

// BundleSimpleFragment.java
public void updateArticleView(String text){
    seekBarName.setText(text);
}
```



# Try - Fragment(interaction Activity) 구현과 이해

// MainActivity.java

→ implements BundleSimpleFragment.OnFragmentInteractionListener

@Override

```
public void onClick(int position, String text) {  
    interactionValue.setText(position + ", " + text);  
}
```

// BundleSimpleFragment.java

private OnFragmentInteractionListener mListener;

@Override

```
public View onCreateView(LayoutInflater inflater, ViewGroup container,  
    Bundle savedInstanceState) {  
    Button button = (Button) view.findViewById(R.id.seekbar_button);  
    button.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            mListener.onClick(position, seekBarName.getText().toString());  
        }  
    });  
    return view;  
}  
  
public interface OnFragmentInteractionListener {  
    void onClick(int position, String text);  
}
```



---

**4**

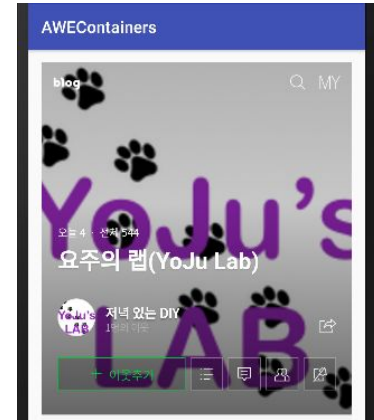
**WebView**

# Try - WebView(simple) 구현과 이해

```
// AndroidManifest.xml
<uses-permission android:name="android.permission.INTERNET" />

// activity_web_view_simple.xml
<WebView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/webViewSimple" />

// WebViewSimpleActivity.java
protected void onCreate(Bundle savedInstanceState) {
    WebView webView = (WebView) findViewById(R.id.webViewSimple);
    webView.getSettings().setJavaScriptEnabled(true);
    webView.setWebViewClient(new WebViewClient(){
        @Override
        public boolean shouldOverrideUrlLoading(WebView view, String url) {
            return super.shouldOverrideUrlLoading(view, url);
        }
    });
    webView.loadUrl("http://blog.naver.com/otter35");
}
```



# Try - WebView(Explicit) 구현과 이해

```
// activity_web_view_explicit.xml
```

```
<Button ... android:id="@+id/searchButton" />
```

```
<WebView ... android:id="@+id/webView" />
```

```
// WebViewExplicitActivity.java
```

```
protected void onCreate(Bundle savedInstanceState) { ...  
    searchButton.setOnClickListener(clickListener);
```

```
}
```

```
View.OnClickListener clickListener = new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View view) {
```

```
        EditText siteUrl = (EditText) findViewById(R.id.siteUrl);
```

```
        WebView webView = (WebView) findViewById(R.id.webView);
```

```
        webView.getSettings().setJavaScriptEnabled(true);
```

```
        webView.setWebViewClient(new WebViewClient(){
```

```
            @Override
```

```
            public boolean shouldOverrideUrlLoading(WebView view, String url) {
```

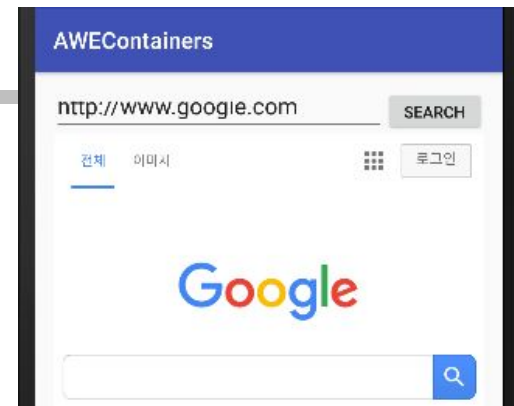
```
                return super.shouldOverrideUrlLoading(view, url);
```

```
            }    });
```

```
        webView.loadUrl(siteUrl.getText().toString());
```

```
        webView.requestFocus();
```

```
    }    };
```



# Get google API Key

- ❖ value/google\_maps\_api.xml
  - copy <https://console.developers.google.com/flows/enableapi?a...>
  - paste URI in Browser address
- ❖ select Create a Project -> Click continue
- ❖ Click Create API Key
- ❖ Click RESTRICT KEY
- ❖ Click Save
- ❖ copy Key and paste in google\_maps\_api.xml



Create credentials to access your enabled APIs. [Refer to the API documentation](#) for details.

## API keys

<input type="checkbox"/> Name	Creation date ▾	Restriction	Key
<input type="checkbox"/> <u>API key 4</u>	Nov 3, 2016	Android app	<a href="#">AlzaSyBUYUJgXTppZ9es7DzOZA4qcUtK3WZDVoM</a>

## Try - GoogleMap(Simple) 구현과 이해

---

```
// MapSimpleActivity.java
```

```
→ extends FragmentActivity implements OnMapReadyCallback
```

```
@Override
```

```
public void onMapReady(GoogleMap googleMap) {
```

```
    mMap = googleMap;
```

```
    LatLng sydney = new LatLng(37.477, 126.88);
```

```
    mMap.addMarker(new MarkerOptions().position(sydney).title("Marker in  
Seoul"));
```

```
    mMap.moveCamera(CameraUpdateFactory.newLatLng(Seoul));
```

```
}
```



## Try - GoogleMap(MyLocation) 구현과 이해

- ❖ 구현 순서
  - Map Type : NONE, NORMAL, SATELLITE, HYBRID, TERRAIN
- ❖ 따라해 보기

@Override

```
public void onMapReady(GoogleMap googleMap) {  
    mMap = googleMap;  
    if (mMap != null) {  
        if (ActivityCompat.checkSelfPermission...  
            return;  
        }  
        mMap.setMyLocationEnabled(true);  
        mMap.setMapType(GoogleMap.MAP_TYPE_TERRAIN);  
    }  
}
```

## Try - GoogleMap(etc) 구현과 이해

---

### ❖ 구현 순서

#### ➤ 구현 코드

```
UiSettings mapSettings ;  
mapSettings = mMap.getUiSettings();  
mapSettings.setZoomControlsEnabled(true);
```

#### ➤ 주요 Method

- setZoomControlsEnabled(boolean)
- setZoomGesturesEnabled(boolean)
- setScrollGesturesEnabled(boolean)
- setTiltGesturesEnabled(boolean)
- setRotateGesturesEnabled(boolean)

### ❖ 해 보기

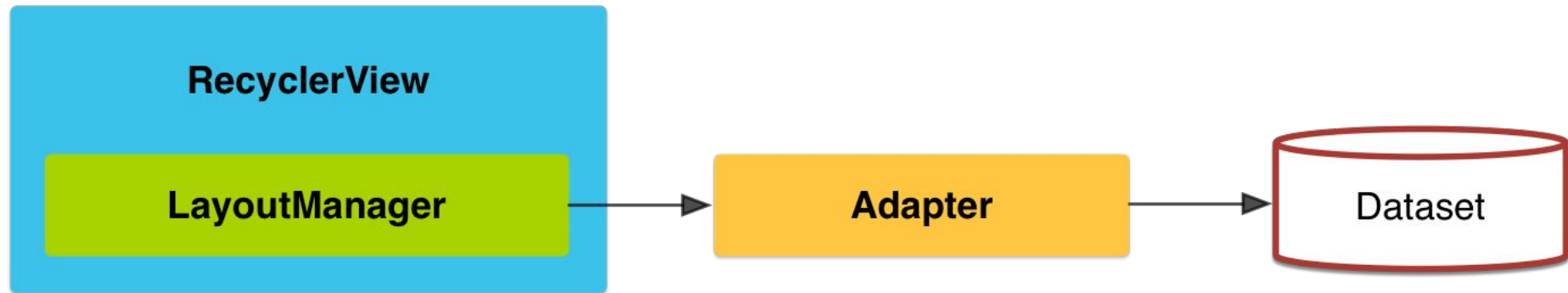
---

**5**

## **Recycler View & Holder**

# Recycler view & Adapter 구현과 이해

- ❖ **LayoutManager** 통해 View 그리는 방법 정의
  - **LinearLayoutManager**
  - **GridLayoutManager**
  - **StaggeredGridLayoutManager**
- ❖ **RecyclerView.ItemAnimator**을 이용하여 **Item Animator** 정의



## Try(1) - ViewHolder & Recycler view 구현과 이해

```
// item_cardlayout.xml    <android.support.v7.widget.CardView ... >    ...
// activity_recycler_view.xml  <...RecyclerView ...:id="@+id/recycler_view" />...
// ViewHolder.java    → extends RecyclerView.ViewHolder{
public ImageView itemImage; public TextView itemTitle; public TextView
itemDetail;
    public ViewHolder(View itemView) {    super(itemView);
        itemImage = (ImageView)itemView.findViewById(R.id.item_image); ...
        itemDetail = (TextView)itemView.findViewById(R.id.item_detail);    }
// RecyclerViewAdapter.java → extends RecyclerView.Adapter<ViewHolder>
ArrayList<HashMap<String,Object>> arrayList ;
public RecyclerViewAdapter(ArrayList<HashMap<String,Object>> arrayList){
    this.arrayList = new ArrayList<HashMap<String,Object>>();
    this.arrayList = arrayList; }    → 제외하고 @Override methods
public ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
    View view = LayoutInflater.from(parent.getContext())
        .inflate(R.layout.item_cardlayout, parent, false);
    ViewHolder viewHolder = new ViewHolder(view);    return viewHolder; }
public void onBindViewHolder(ViewHolder holder, int position) {
    HashMap<String,Object> hashMap = arrayList.get(position);
    holder.itemTitle.setText((String)hashMap.get("title"));    ...
    holder.itemImage.setImageResource((Integer) hashMap.get("image")); }
public int getItemCount() {    return arrayList.size();    }
```

## Try(2) - ViewHolder & Recycler view 구현과 이해

```
// RecyclerViewActivity.java
RecyclerView recyclerView;
RecyclerView.LayoutManager layoutManager;
RecyclerViewAdapter adapter;
protected void onCreate(Bundle savedInstanceState) {
    ArrayList<HashMap<String, Object>> arrayList = new
ArrayList<HashMap<String, Object>>();
    HashMap<String, Object> hashMap = null;
    hashMap = new HashMap<String, Object>();
    hashMap.put("title", "Chapter Two");
    hashMap.put("detail", "Item two details");
    hashMap.put("image", R.drawable.android_image_2);
    arrayList.add(hashMap); ...
    recyclerView = (RecyclerView) findViewById(R.id.recycler_view);
    layoutManager = new LinearLayoutManager(this);
    recyclerView.setLayoutManager(layoutManager);
    adapter = new RecyclerViewAdapter(arrayList);
    recyclerView.setAdapter(adapter);
}
```

## Try - add Item Recycler view 구현과 이해

```
// activity_recycler_view.xml
<android.support.design.widget.FloatingActionButton ...
    android:id="@+id/addItemAction"
// RecyclerViewAdapter.java → extends RecyclerView.Adapter<ViewHolder>
public void addItem(HashMap<String,Object> hashMap){
    this.arrayList.add(hashMap);
    notifyItemInserted(position);
}
//RecyclerViewActivity.java
FloatingActionButton floatingActionButton =
    (FloatingActionButton)findViewById(R.id.addItemAction);
floatingActionButton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        HashMap<String,Object> hashMap = new HashMap<String,Object>();
        hashMap.put("title", "Chapter Oone"); ...
        hashMap.put("image", R.drawable.android_image_1);
        adapter.addItem(1,hashMap);
    }
});
```

## Try - remove Item Recycler view 구현과 이해

//ViewHolder.java → move in RecyclerView.Adapter.java

```
public ViewHolder(final View itemView) {  
    ...  
    itemView.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View view) {  
            int position = getAdapterPosition();  
            removeItem(position);  
            Log.d("ViewHolder Click", position+", "+getItemId());  
        }  
    });  
}
```

// RecyclerView.Adapter.java

→ extends RecyclerView.Adapter<RecyclerView.ViewHolder>

```
public void removeItem(int position){  
    this.arrayList.remove(position);  
    notifyDataSetChanged();  
}
```



## 최종여행물

