Họ và tên: Nguyễn Ngọc Minh

MSSV:1150070029

11ĐH\_TMĐT

**Bài 1: Sử dụng Animation từ file XML**

Đầu tiên tạo dự ấn chọn file>New>New Project>Empty Views Activity,Project tên là Lap6\_LTMB,Language để là Java xong ấn Finish

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Tiếp theo ta tạo file values/dimens.xml

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Ở file dimens.xml mới tạo ta gõ đoạn code:

<!-- res/values/dimens.xml -->  
<resources>  
 <dimen name="margin\_base">5dp</dimen>  
 <dimen name="margin\_basex2">10dp</dimen>  
 <dimen name="text\_medium">16sp</dimen>  
 <dimen name="image\_base">100dp</dimen>  
</resources>

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Ở file strings.xml ta gõ đoạn code:

<!-- res/values/strings.xml -->  
<resources>  
 <string name="app\_name">Animation Lab 06</string>  
  
 <string name="from\_xml">From XML</string>  
 <string name="from\_code">From CODE</string>  
  
 <string name="fade\_in">Fade In</string>  
 <string name="fade\_out">Fade Out</string>  
 <string name="blink">Blink</string>  
 <string name="zoom\_in">Zoom In</string>  
 <string name="zoom\_out">Zoom Out</string>  
 <string name="rotate">Rotate</string>  
 <string name="move">Move</string>  
 <string name="slide\_up">Slide Up</string>  
 <string name="bounce">Bounce</string>  
 <string name="combine">Combine</string>  
</resources>

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Ở file activity\_main.xml ta gõ đoạn code:

<?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="com.example.lap6\_ltmb.MainActivity">  
  
 <FrameLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="6">  
  
 <ImageView  
 android:id="@+id/iv\_uit\_logo"  
 android:layout\_width="100dp"  
 android:layout\_height="100dp"  
 android:layout\_gravity="center"  
 android:scaleType="fitCenter"  
 android:src="@drawable/logo" />  
 </FrameLayout>  
  
 <ScrollView  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="5">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:padding="8dp">  
  
 <!-- Fade In -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_fade\_in\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Fade In "/>  
 <Button  
 android:id="@+id/btn\_fade\_in\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Fade In "/>  
 </LinearLayout>  
  
 <!-- Fade Out -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_fade\_out\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Fade Out "/>  
 <Button  
 android:id="@+id/btn\_fade\_out\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Fade Out "/>  
 </LinearLayout>  
  
 <!-- Blink -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_blink\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Blink "/>  
 <Button  
 android:id="@+id/btn\_blink\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Blink "/>  
 </LinearLayout>  
  
 <!-- Zoom In -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_zoom\_in\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Zoom In "/>  
 <Button  
 android:id="@+id/btn\_zoom\_in\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Zoom In "/>  
 </LinearLayout>  
  
 <!-- Zoom Out -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_zoom\_out\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Zoom Out "/>  
 <Button  
 android:id="@+id/btn\_zoom\_out\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Zoom Out "/>  
 </LinearLayout>  
  
 <!-- Rotate -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_rotate\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Rotate "/>  
 <Button  
 android:id="@+id/btn\_rotate\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Rotate "/>  
 </LinearLayout>  
  
 <!-- Move -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_move\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Move "/>  
 <Button  
 android:id="@+id/btn\_move\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Move (CODE)"/>  
 </LinearLayout>  
  
 <!-- Slide Up -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_slide\_up\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Slide Up "/>  
 <Button  
 android:id="@+id/btn\_slide\_up\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Slide Up "/>  
 </LinearLayout>  
  
 <!-- Bounce -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp">  
 <Button  
 android:id="@+id/btn\_bounce\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Bounce "/>  
 <Button  
 android:id="@+id/btn\_bounce\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Bounce "/>  
 </LinearLayout>  
  
 <!-- Combine -->  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:layout\_marginTop="6dp"  
 android:layout\_marginBottom="12dp">  
 <Button  
 android:id="@+id/btn\_combine\_xml"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Combine "/>  
 <Button  
 android:id="@+id/btn\_combine\_code"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Combine "/>  
 </LinearLayout>  
  
 </LinearLayout>  
 </ScrollView>  
</LinearLayout>

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Tiếp theo ta tạo file anim XML (đặt trong res/anim/)

**A screen shot of a computer program

AI-generated content may be incorrect.**

Tiếp tho ta tạo file anim\_fade\_in.xml

A screenshot of a computer program

AI-generated content may be incorrect.

Ở file anim\_fade\_in.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true">

<alpha android:duration="1000" android:fromAlpha="0.0" android:toAlpha="1.0"/>

</set>

A screenshot of a computer

AI-generated content may be incorrect.

Tiếp theo ta tạo file anim\_fade\_out.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file anim\_fade\_out.xml mới tạo ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true">

<alpha android:duration="1000" android:fromAlpha="1.0" android:toAlpha="0.0"/>

</set>

A screenshot of a computer

AI-generated content may be incorrect.Tiếp theo ta tạo file anim\_blink.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file file anim\_blink.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android">

<alpha

android:fromAlpha="0.0"

android:toAlpha="1.0"

android:duration="300"

android:repeatMode="reverse"

android:repeatCount="3"/>

</set>

A screenshot of a computer

AI-generated content may be incorrect.

Tiếp theo ta tạo file anim\_bounce.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file file anim\_bounce.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android"

android:fillAfter="true"

android:interpolator="@android:anim/bounce\_interpolator">

<scale

android:duration="500"

android:fromXScale="1.0"

android:fromYScale="0.0"

android:toXScale="1.0"

android:toYScale="1.0"/>

</set>

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Tiếp theo ta tạo file anim\_move.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file file anim\_move.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android"

android:fillAfter="true"

android:interpolator="@android:anim/linear\_interpolator">

<translate

android:fromXDelta="0%p"

android:toXDelta="75%p"

android:duration="800"/>

</set>

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Tiếp theo ta tạo file anim\_rotate.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file file anim\_rotate.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android">

<rotate

android:fromDegrees="0"

android:toDegrees="360"

android:pivotX="50%"

android:pivotY="50%"

android:duration="600"

android:repeatMode="restart"

android:repeatCount="2"

android:interpolator="@android:anim/cycle\_interpolator"/>

</set>

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Tiếp theo ta tạo file anim\_slide\_up.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file file anim\_slide\_up.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true">

<scale

android:duration="500"

android:fromXScale="1.0"

android:fromYScale="1.0"

android:toXScale="1.0"

android:toYScale="0.0"/>

</set>

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Tiếp theo ta tạo file anim\_zoom\_in.xml

A screenshot of a computer

AI-generated content may be incorrect.

Ở file anim\_zoom\_in.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true">  
 <scale  
 android:duration="1000"  
 android:fromXScale="1"  
 android:fromYScale="1"  
 android:pivotX="50%"  
 android:pivotY="50%"  
 android:toXScale="3"  
 android:toYScale="3"/>  
</set>

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Tiếp theo ta tạo file anim\_zoom\_out.xml ở file anim\_zoom\_out.xml ta gõ đoạn code:

<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true">  
 <scale  
 android:duration="1000"  
 android:fromXScale="1.0"  
 android:fromYScale="1.0"  
 android:pivotX="50%"  
 android:pivotY="50%"  
 android:toXScale="0.5"  
 android:toYScale="0.5"/>  
</set>

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Ở MainActivity.java ta gõ đoạn code:

// app/src/main/java/vn/uit/lap6\_ltmb/MainActivity.java  
package com.example.lap6\_ltmb;  
import androidx.appcompat.app.AppCompatActivity;   
  
  
import android.os.Bundle;  
import android.view.animation.\*;  
import android.widget.Button;  
import android.widget.ImageView;  
import android.widget.Toast;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 private Button btnFadeInXml, btnFadeInCode, btnFadeOutXml, btnFadeOutCode,  
 btnBlinkXml, btnBlinkCode, btnZoomInXml, btnZoomInCode, btnZoomOutXml, btnZoomOutCode,  
 btnRotateXml, btnRotateCode, btnMoveXml, btnMoveCode, btnSlideUpXml, btnSlideUpCode,  
 btnBounceXml, btnBounceCode, btnCombineXml, btnCombineCode;  
  
 private ImageView ivUitLogo;  
 private Animation.AnimationListener animationListener;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 findViewsByIds();  
 initVariables();  
  
 // --- XML animations ---  
 handleClickAnimationXml(btnFadeInXml, R.anim.*anim\_fade\_in*);  
 handleClickAnimationXml(btnFadeOutXml, R.anim.*anim\_fade\_out*);  
 handleClickAnimationXml(btnBlinkXml, R.anim.*anim\_blink*);  
 handleClickAnimationXml(btnZoomInXml, R.anim.*anim\_zoom\_in*);  
 handleClickAnimationXml(btnZoomOutXml, R.anim.*anim\_zoom\_out*);  
 handleClickAnimationXml(btnRotateXml, R.anim.*anim\_rotate*);  
 handleClickAnimationXml(btnMoveXml, R.anim.*anim\_move*);  
 handleClickAnimationXml(btnSlideUpXml, R.anim.*anim\_slide\_up*);  
 handleClickAnimationXml(btnBounceXml, R.anim.*anim\_bounce*);  
  
 // Combine (XML): ví dụ kết hợp zoom\_in trước rồi rotate sau (chạy nối tiếp bằng code)  
 btnCombineXml.setOnClickListener(v -> {  
 Animation a1 = AnimationUtils.*loadAnimation*(this, R.anim.*anim\_zoom\_in*);  
 a1.setAnimationListener(new SimpleEndListener(() -> {  
 Animation a2 = AnimationUtils.*loadAnimation*(this, R.anim.*anim\_rotate*);  
 a2.setAnimationListener(animationListener);  
 ivUitLogo.startAnimation(a2);  
 }));  
 ivUitLogo.startAnimation(a1);  
 });  
  
 // --- CODE animations ---  
 handleClickAnimationCode(btnFadeInCode, createFadeIn());  
 handleClickAnimationCode(btnFadeOutCode, createFadeOut());  
 handleClickAnimationCode(btnBlinkCode, createBlink());  
 handleClickAnimationCode(btnZoomInCode, createZoomIn());  
 handleClickAnimationCode(btnZoomOutCode, createZoomOut());  
 handleClickAnimationCode(btnRotateCode, createRotate());  
 handleClickAnimationCode(btnMoveCode, createMove());  
 handleClickAnimationCode(btnSlideUpCode, createSlideUp());  
 handleClickAnimationCode(btnBounceCode, createBounce());  
  
 // Combine (CODE): ví dụ phóng to rồi xoay  
 btnCombineCode.setOnClickListener(v -> {  
 AnimationSet set = new AnimationSet(true);  
 set.setInterpolator(new LinearInterpolator());  
 set.setFillAfter(true);  
  
 ScaleAnimation zoom = new ScaleAnimation(  
 1f, 3f, 1f, 3f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 zoom.setDuration(1000);  
  
 RotateAnimation rotate = new RotateAnimation(  
 0, 360,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 rotate.setDuration(600);  
 rotate.setRepeatCount(2);  
 rotate.setRepeatMode(Animation.*RESTART*);  
  
 set.addAnimation(zoom);  
 set.addAnimation(rotate);  
 set.setAnimationListener(animationListener);  
  
 ivUitLogo.startAnimation(set);  
 });  
 }  
  
 private void findViewsByIds() {  
 ivUitLogo = findViewById(R.id.*iv\_uit\_logo*);  
  
 btnFadeInXml = findViewById(R.id.*btn\_fade\_in\_xml*);  
 btnFadeInCode = findViewById(R.id.*btn\_fade\_in\_code*);  
 btnFadeOutXml = findViewById(R.id.*btn\_fade\_out\_xml*);  
 btnFadeOutCode = findViewById(R.id.*btn\_fade\_out\_code*);  
 btnBlinkXml = findViewById(R.id.*btn\_blink\_xml*);  
 btnBlinkCode = findViewById(R.id.*btn\_blink\_code*);  
 btnZoomInXml = findViewById(R.id.*btn\_zoom\_in\_xml*);  
 btnZoomInCode = findViewById(R.id.*btn\_zoom\_in\_code*);  
 btnZoomOutXml = findViewById(R.id.*btn\_zoom\_out\_xml*);  
 btnZoomOutCode = findViewById(R.id.*btn\_zoom\_out\_code*);  
 btnRotateXml = findViewById(R.id.*btn\_rotate\_xml*);  
 btnRotateCode = findViewById(R.id.*btn\_rotate\_code*);  
 btnMoveXml = findViewById(R.id.*btn\_move\_xml*);  
 btnMoveCode = findViewById(R.id.*btn\_move\_code*);  
 btnSlideUpXml = findViewById(R.id.*btn\_slide\_up\_xml*);  
 btnSlideUpCode = findViewById(R.id.*btn\_slide\_up\_code*);  
 btnBounceXml = findViewById(R.id.*btn\_bounce\_xml*);  
 btnBounceCode = findViewById(R.id.*btn\_bounce\_code*);  
 btnCombineXml = findViewById(R.id.*btn\_combine\_xml*);  
 btnCombineCode = findViewById(R.id.*btn\_combine\_code*);  
 }  
  
 private void initVariables() {  
 animationListener = new Animation.AnimationListener() {  
 @Override public void onAnimationStart(Animation animation) { }  
 @Override public void onAnimationEnd(Animation animation) {  
 Toast.*makeText*(getApplicationContext(), "Animation Stopped", Toast.*LENGTH\_SHORT*).show();  
 }  
 @Override public void onAnimationRepeat(Animation animation) { }  
 };  
 }  
  
 */\*\* Bắt click cho nút dùng XML \*/* private void handleClickAnimationXml(Button btn, int animResId) {  
 btn.setOnClickListener(v -> {  
 Animation anim = android.view.animation.AnimationUtils.*loadAnimation*(this, animResId);  
 anim.setAnimationListener(animationListener);  
 ivUitLogo.startAnimation(anim);  
 });  
 }  
  
 */\*\* Bắt click cho nút dùng CODE \*/* private void handleClickAnimationCode(Button btn, Animation anim) {  
 btn.setOnClickListener(v -> {  
 anim.setAnimationListener(animationListener);  
 ivUitLogo.startAnimation(anim);  
 });  
 }  
  
 // ====== Các animation tạo bằng CODE ======  
  
 private Animation createFadeIn() {  
 AlphaAnimation a = new AlphaAnimation(0f, 1f);  
 a.setDuration(1000);  
 a.setFillAfter(true);  
 return a;  
 }  
 private Animation createFadeOut() {  
 AlphaAnimation a = new AlphaAnimation(1f, 0f);  
 a.setDuration(1000);  
 a.setFillAfter(true);  
 return a;  
 }  
 private Animation createBlink() {  
 AlphaAnimation a = new AlphaAnimation(0f, 1f);  
 a.setDuration(300);  
 a.setRepeatMode(Animation.*REVERSE*);  
 a.setRepeatCount(3);  
 return a;  
 }  
 private Animation createZoomIn() {  
 ScaleAnimation s = new ScaleAnimation(  
 1f, 3f, 1f, 3f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 s.setDuration(1000);  
 s.setFillAfter(true);  
 return s;  
 }  
 private Animation createZoomOut() {  
 ScaleAnimation s = new ScaleAnimation(  
 1f, 0.5f, 1f, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 s.setDuration(1000);  
 s.setFillAfter(true);  
 return s;  
 }  
 private Animation createRotate() {  
 RotateAnimation r = new RotateAnimation(  
 0, 360,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 r.setDuration(600);  
 r.setRepeatMode(Animation.*RESTART*);  
 r.setRepeatCount(2);  
 return r;  
 }  
 private Animation createMove() {  
 TranslateAnimation t = new TranslateAnimation(  
 Animation.*RELATIVE\_TO\_PARENT*, 0f,  
 Animation.*RELATIVE\_TO\_PARENT*, 0.75f,  
 Animation.*RELATIVE\_TO\_PARENT*, 0f,  
 Animation.*RELATIVE\_TO\_PARENT*, 0f  
 );  
 t.setDuration(800);  
 t.setFillAfter(true);  
 return t;  
 }  
 private Animation createSlideUp() {  
 // Mô phỏng slide-up bằng thu hẹp theo trục Y  
 ScaleAnimation s = new ScaleAnimation(  
 1f, 1f, 1f, 0f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 1f  
 );  
 s.setDuration(500);  
 s.setFillAfter(true);  
 return s;  
 }  
 private Animation createBounce() {  
 // Bounce đơn giản: scale Y từ 0 -> 1 với BounceInterpolator  
 ScaleAnimation s = new ScaleAnimation(  
 1f, 1f, 0f, 1f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 1f  
 );  
 s.setDuration(500);  
 s.setFillAfter(true);  
 s.setInterpolator(new BounceInterpolator());  
 return s;  
 }  
  
 */\*\* Helper nhỏ để bắt sự kiện kết thúc cho chuỗi animation \*/* private static class SimpleEndListener implements Animation.AnimationListener {  
 private final Runnable onEnd;  
 SimpleEndListener(Runnable onEnd) { this.onEnd = onEnd; }  
 @Override public void onAnimationStart(Animation animation) {}  
 @Override public void onAnimationEnd(Animation animation) { if (onEnd != null) onEnd.run(); }  
 @Override public void onAnimationRepeat(Animation animation) {}  
 }  
}

A screenshot of a computer program

AI-generated content may be incorrect.

Kết quả chạy được:

A screenshot of a computer program

AI-generated content may be incorrect.

**Bài 2:  Sử dụng Animation từ code**

Ở file MainActivity.java ta bổ sung thêm đoạn code

private Animation createFadeIn() {

AlphaAnimation a = new AlphaAnimation(0f, 1f);

a.setDuration(1000);

a.setFillAfter(true);

return a;

}

private Animation createFadeOut() {

AlphaAnimation a = new AlphaAnimation(1f, 0f);

a.setDuration(1000);

a.setFillAfter(true);

return a;

}

private Animation createBlink() {

AlphaAnimation a = new AlphaAnimation(0f, 1f);

a.setDuration(300);

a.setRepeatMode(Animation.REVERSE);

a.setRepeatCount(3);

return a;

}

private Animation createZoomIn() {

ScaleAnimation s = new ScaleAnimation(

1f, 3f, 1f, 3f,

Animation.RELATIVE\_TO\_SELF, 0.5f,

Animation.RELATIVE\_TO\_SELF, 0.5f

);

s.setDuration(1000);

s.setFillAfter(true);

return s;

}

private Animation createZoomOut() {

ScaleAnimation s = new ScaleAnimation(

1f, 0.5f, 1f, 0.5f,

Animation.RELATIVE\_TO\_SELF, 0.5f,

Animation.RELATIVE\_TO\_SELF, 0.5f

);

s.setDuration(1000);

s.setFillAfter(true);

return s;

}

private Animation createRotate() {

RotateAnimation r = new RotateAnimation(

0, 360,

Animation.RELATIVE\_TO\_SELF, 0.5f,

Animation.RELATIVE\_TO\_SELF, 0.5f

);

r.setDuration(600);

r.setRepeatMode(Animation.RESTART);

r.setRepeatCount(2);

return r;

}

private Animation createMove() {

TranslateAnimation t = new TranslateAnimation(

Animation.RELATIVE\_TO\_PARENT, 0f,

Animation.RELATIVE\_TO\_PARENT, 0.75f,

Animation.RELATIVE\_TO\_PARENT, 0f,

Animation.RELATIVE\_TO\_PARENT, 0f

);

t.setDuration(800);

t.setFillAfter(true);

t.setInterpolator(new LinearInterpolator());

return t;

}

private Animation createSlideUp() {

// Giả lập slide-up bằng thu nhỏ theo trục Y

ScaleAnimation s = new ScaleAnimation(

1f, 1f, 1f, 0f,

Animation.RELATIVE\_TO\_SELF, 0.5f,

Animation.RELATIVE\_TO\_SELF, 1f

);

s.setDuration(500);

s.setFillAfter(true);

return s;

}

private Animation createBounce() {

ScaleAnimation s = new ScaleAnimation(

1f, 1f, 0f, 1f,

Animation.RELATIVE\_TO\_SELF, 0.5f,

Animation.RELATIVE\_TO\_SELF, 1f

);

s.setDuration(500);

s.setFillAfter(true);

s.setInterpolator(new BounceInterpolator());

return s;

}

}

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Kết quả chạy được:

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**Bài 3: Tạo animation khi start Activity mới**

Bước 1: Tạo Activity mới đặt tên là DetailActivity

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Bước 2:Tạo activity\_detail.xml

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Ở file activity\_detail.xml ta gõ đoạn code:

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:gravity="center"  
 android:padding="24dp"  
 android:layout\_width="match\_parent" android:layout\_height="match\_parent">  
  
 <ImageView  
 android:id="@+id/iv\_detail\_logo"  
 android:layout\_width="160dp"  
 android:layout\_height="160dp"  
 android:src="@drawable/logo"  
 android:contentDescription="@string/app\_name"/>  
</LinearLayout>

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Ở Manifest: khai báo activity mới

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