**CÔNG NGHỆ LẬP TRÌNH ĐA NỀN TẢNG**

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Lớp: 11\_ĐH\_TMĐT

**BÀI TẬP LÝ THUYẾT BUỔI 6**

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

Bước 1: Tạo file dimens.xml để định nghĩa kích thước

* app/res/values/themes/dimens.xml
* Nội dung file
* <?xml version="1.0" encoding="utf-8"?>  
  <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>

Bước 2: Tạo file strings.xml tạo chuỗi hiển thị trên button

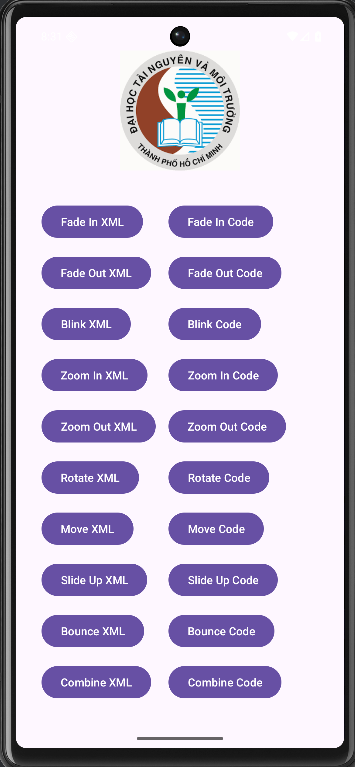
* app/res/values/themes/strings.xml
* Nội dung file
* <resources>  
   <string name="from\_xml">From XML</string>  
   <string name="from\_code">From CODE</string>  
   <string name="fade\_in">Fade In</string>  
   <string name="fade\_out">Fade Out</string>  
   <string name="blink">Blink</string>  
   <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>

Bước 3: Xây dựng giao diện

* Nội dung file
* <?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.huynhbaotran1150070045lab6.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="@dimen/image\_base"  
   android:layout\_height="@dimen/image\_base"  
   android:layout\_gravity="center"  
   android:scaleType="fitCenter"  
   android:src="@drawable/ic\_launcher\_foreground"/>  
   </FrameLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_basex2"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <TextView  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/from\_xml"  
   android:gravity="center"  
   android:textStyle="bold"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
   <TextView  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/from\_code"  
   android:textStyle="bold"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
   </LinearLayout>  
   <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">  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_fade\_in\_xml"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
    
   android:layout\_weight="1"  
   android:text="@string/fade\_in"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_fade\_in\_code"  
   android:layout\_width="0dp"android:layout\_height="wrap\_content"  
    
   android:layout\_weight="1"  
   android:text="@string/fade\_in"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_fade\_out\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/fade\_out"  
   android:gravity="center"  
    
   android:layout\_marginRight="@dimen/margin\_base"/>  
   <Button  
   android:id="@+id/btn\_fade\_out\_code"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
    
   android:layout\_weight="1"  
   android:text="@string/fade\_out"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_blink\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/blink"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_blink\_code"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/blink"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_zoom\_in\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"android:text="@string/zoom\_in"  
   android:gravity="center"  
    
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_zoom\_in\_code"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
    
   android:layout\_weight="1"  
   android:text="@string/zoom\_in"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_zoom\_out\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/zoom\_out"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_zoom\_out\_code"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/zoom\_out"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_rotate\_xml"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/rotate"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_rotate\_code"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/rotate"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_move\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/move"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_move\_code"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/move"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_slide\_up\_xml"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/slide\_up"  
   android:gravity="center"  
    
   android:layout\_marginRight="@dimen/margin\_base"/>  
   <Button  
   android:id="@+id/btn\_slide\_up\_code"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/slide\_up"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
    
   <Button  
   android:id="@+id/btn\_bounce\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/bounce"  
   android:gravity="center"  
    
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_bounce\_code"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
    
   android:layout\_weight="1"  
   android:text="@string/bounce"  
   android:gravity="center"android:layout\_marginRight="@dimen/margin\_base"/>  
   </LinearLayout>  
   <LinearLayout  
   android:layout\_marginTop="@dimen/margin\_base"  
   android:layout\_width="match\_parent"  
   android:layout\_height="wrap\_content"  
   android:orientation="horizontal">  
   <Button  
   android:id="@+id/btn\_combine\_xml"  
   android:layout\_width="0dp"  
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/combine"  
   android:gravity="center"  
   android:layout\_marginRight="@dimen/margin\_base"/>  
    
   <Button  
   android:id="@+id/btn\_combine\_code"  
   android:layout\_width="0dp"  
    
   android:layout\_height="wrap\_content"  
   android:layout\_weight="1"  
   android:text="@string/combine"  
   android:gravity="center"  
    
   android:layout\_marginRight="@dimen/margin\_base"/>  
   </LinearLayout>  
   </LinearLayout>  
   </ScrollView>  
  </LinearLayout>

Bước 4: Định nghĩa animation Fade In trong file xml

* Tạo folder anim trong folder res
* Tạo file anim\_fade\_in.xml trong folder anim với nội dung:
* <?xml version="1.0" encoding="utf-8"?>  
    
  <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>
* Khai báo biến và xây dựng các hàm findViewsbyIds và InitVariables
* Tạo các file
  + res/anim/anim\_fade\_in.xml
  + res/anim/fade\_out.xml
  + res/anim/blink.xml
  + res/anim/zoom\_in.xml
  + res/anim/zoom\_out.xml
  + res/anim/rotate.xml
  + res/anim/move.xml
  + res/anim/slide\_up.xml
  + res/anim/bounce.xml
  + res/anim/combine.xml
* **Kết quả**

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**Bài tập 2: Sử dụng Animation từ code**

* **Xây dựng hàm handleClickAnimationCode**

 Viết **hàm xử lý chung** handleClickAnimationCode() (giống handleClickAnimationXml() nhưng cho animation code).

private void handleClickAnimationXml(Button btn, int animId) {  
 btn.setOnClickListener(v -> {  
 Animation animation = AnimationUtils.*loadAnimation*(MainActivity.this, animId);  
 animation.setAnimationListener(animationListener);  
 ivUitLogo.startAnimation(animation);  
 });  
 }  
 // Hàm xử lý animation tạo bằng code  
 private void handleClickAnimationCode(Button btn, final Animation animation) {  
 btn.setOnClickListener(v -> {  
 animation.setAnimationListener(animationListener);  
 ivUitLogo.startAnimation(animation);  
 });  
 }  
  
// =============================  
// Các hàm khởi tạo Animation Code  
// =============================  
  
 private Animation createFadeInAnimation() {  
 AlphaAnimation anim = new AlphaAnimation(0.0f, 1.0f);  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createFadeOutAnimation() {  
 AlphaAnimation anim = new AlphaAnimation(1.0f, 0.0f);  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createZoomInAnimation() {  
 ScaleAnimation anim = new ScaleAnimation(  
 0.0f, 1.0f,  
 0.0f, 1.0f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createZoomOutAnimation() {  
 ScaleAnimation anim = new ScaleAnimation(  
 1.0f, 0.0f,  
 1.0f, 0.0f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createRotateAnimation() {  
 RotateAnimation anim = new RotateAnimation(  
 0, 360,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createMoveAnimation() {  
 TranslateAnimation anim = new TranslateAnimation(0, 200, 0, 200);  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createSlideUpAnimation() {  
 TranslateAnimation anim = new TranslateAnimation(0, 0, 200, 0);  
 anim.setDuration(1000);  
 anim.setFillAfter(true);  
 return anim;  
 }  
  
 private Animation createBounceAnimation() {  
 ScaleAnimation anim = new ScaleAnimation(  
 0.5f, 1.0f,  
 0.5f, 1.0f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 anim.setDuration(500);  
 anim.setRepeatCount(3);  
 anim.setRepeatMode(Animation.*REVERSE*);  
 return anim;  
 }  
  
 private Animation createCombineAnimation() {  
 AnimationSet set = new AnimationSet(true);  
  
 // Fade In  
 AlphaAnimation fade = new AlphaAnimation(0.0f, 1.0f);  
 fade.setDuration(1000);  
  
 // Rotate  
 RotateAnimation rotate = new RotateAnimation(  
 0, 360,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f,  
 Animation.*RELATIVE\_TO\_SELF*, 0.5f  
 );  
 rotate.setDuration(1000);  
  
 set.addAnimation(fade);  
 set.addAnimation(rotate);  
 set.setFillAfter(true);  
  
 return set;  
 }  
  
}

 Viết các **hàm khởi tạo animation bằng code** (FadeIn, FadeOut, ZoomIn, ZoomOut, Rotate, Move, SlideUp, Bounce, Combine …).

handleClickAnimationCode(btnFadeInCode, createFadeInAnimation());  
handleClickAnimationCode(btnFadeOutCode, createFadeOutAnimation());  
handleClickAnimationCode(btnZoomInCode, createZoomInAnimation());  
handleClickAnimationCode(btnZoomOutCode, createZoomOutAnimation());  
handleClickAnimationCode(btnRotateCode, createRotateAnimation());  
handleClickAnimationCode(btnMoveCode, createMoveAnimation());  
handleClickAnimationCode(btnSlideUpCode, createSlideUpAnimation());  
handleClickAnimationCode(btnBounceCode, createBounceAnimation());  
handleClickAnimationCode(btnCombineCode, createCombineAnimation());

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