View Animation

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Tween Animation

Perform one or more transformation to a single view.

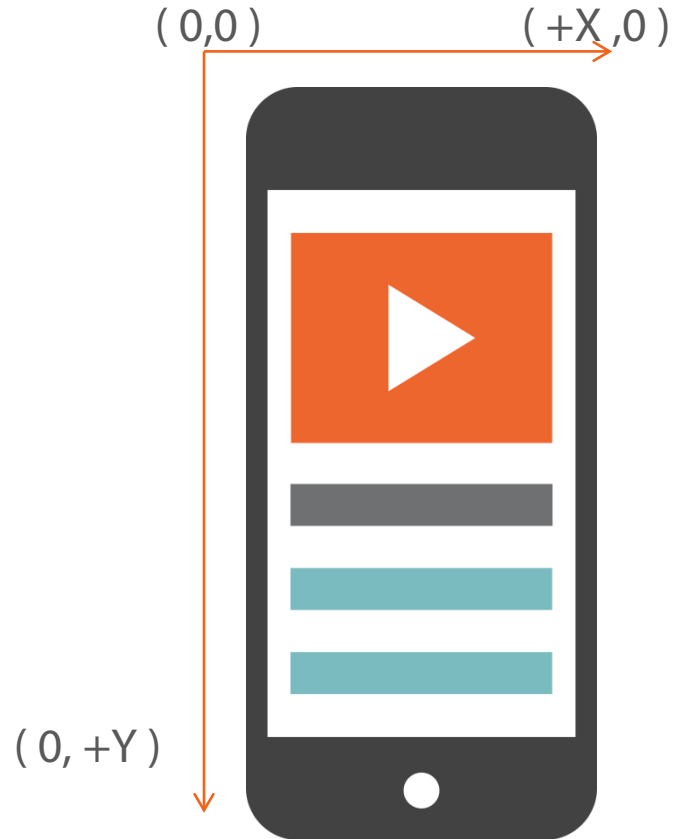The possible transformation are rotation, scaling, translation, and fading.

Two ways to implement View (Tween) animation :-

- XML file in **res/anim** directory of the project.
- Java code

Animation XML File

- Like all XML file, there must be a single root element.

- The elements performing animations are:-
  - **\<alpha\>**
  - **\<scale\>**
  - **\<translate\>**
  - **\<rotate\>**

- Animations elements may be grouped using the **\<set\>** element.

- In addition to other properties, each animation's starting time and duration are specified allowing for either sequential or simultaneous animation.

pluralsight

X-y Coordinates

(0,0)   (+X,0)

(0, +Y)

Alpha Animation

<alpha>
- A fade-in or fade-out animation.

Attributes:

android:fromAlpha

Float. Starting opacity offset.

0.0 – Transparent

1.0 – Opaque

android:toAlpha

Float. Ending opacity offset.

0.0 – Transparent

1.0 – Opaque

```
<alpha

    android:fromAlpha = "1.0"
    android:toAlpha   = "0.0"
    android:duration  = "300"

                />
```

Alpha Animation example

The image or the view will Fade out within 0.3 seconds

Scale Animation

<scale>

        - A resizing animation.

Attributes:

android:fromXScale
        Float. Starting X size offset.

android:toXScale
        Float. Ending X size offset.

android:fromYScale
        Float. Starting Y size offset.

android:toYScale
        Float. Ending Y size offset.

android:pivotX
        Float. The X coordinate to remain fixed when the object is scaled.
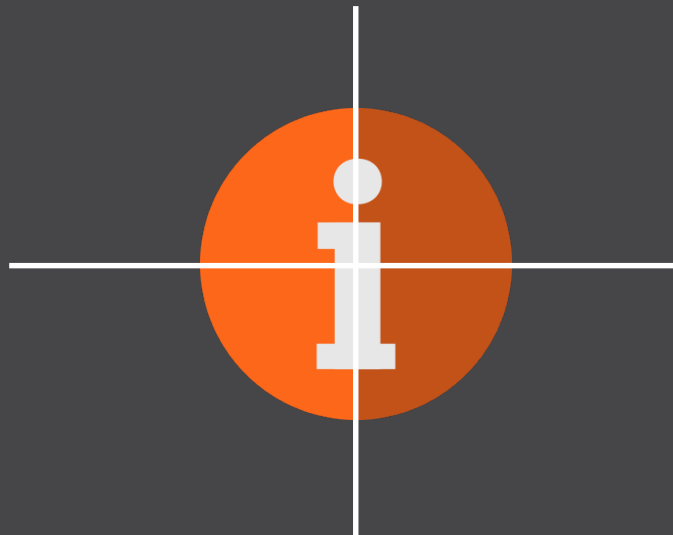
android:pivotY
        Float. The Y coordinate to remain fixed when the object is scaled.

```
<scale
        android:fromXScale = "1.0"
        android:toXScale    = "1.5"
        android:fromYScale = "1.0"
        android:toYScale    = "1.5"
        android:pivotX      = "50%"
        android:pivotY      = "50%"
        android:duration    = "500"

                            />
```

Scale Animation example

The image or the view will scale up to 1.5 times pivoted at center.

Translate Animation

<translate>
   - A vertical and/or horizontal motion.- Represents a TranslateAnimation.

Attributes:

    android:fromXDelta
       Float or percentage. Starting X offset.

    android:toXDelta
       Float or percentage. Ending X offset.

    android:fromYDelta
       Float or percentage. Starting Y offset.

    android:toYDelta
       Float or percentage. Ending Y offset.

```
<translate
        android:fromXDelta = "0"
        android:toXDelta    = "50"
        android:fromYDelta  = "0"
        android:toYDelta    = "0"
        android:duration    = "500"

    />
```

Translate Animation example

The image or View will move 50px in positive x-axis within 0.5 sec

Rotate

\<rotate\>
    - A rotation animation

Attributes:

  android:fromDegrees
    Float. Starting angular position, in degrees.

  android:toDegrees
    Float. Ending angular position, in degrees.

  android:pivotX
    Float or percentage. The X coordinate of the center of rotation.

  android:pivotY
    Float or percentage. The Y coordinate of the center of rotation.

```
<rotate

    android:fromDegrees = "0"
    android:toDegree    = "360"
    android:pivotX      = "50%"
    android:pivotY      = "50%"
    android:duration    = "1500"

                        />
```

Rotate Animation example

The image or View will rotate 360 degree clockwise within 1.5 seconds

Tween Animation

Topics covered are :-

1. Alpha animation

2. Scale animation

3. Translate animation

4. Rotate animation

Animation Listener

Animation Listener

- Animation listener receives notifications from an animation.
  - Notifications indicate animation related events, such as the end or the repetition of the animation.

Public Methods
- onAnimationEnd(Animation anim)
  - Notifies the end of the Animation. This callback is not invoked for animations with repeat count set to INFINITE.

- onAnimationRepeat(Animation anim)
  - Notifies the repetition of the animation.

- onAnimationStart(Animation anim)
  - Notifies the start of the animation.

Tween Animation

By Java

```
AlphaAnimation(float fromAlpha, float toAlpha)
```

Syntax

Alpha Animation contains only one constructor

```
ScaleAnimation(
            float fromX, float toX,
            float fromY, float toY
         )
```

```
ScaleAnimation(
            float fromX, float toX,
            float fromY, float toY,
            float pivotX,float pivotY
         )
```

```
ScaleAnimation(
            float fromX,    float toX,
            float fromY ,   float toY,
            int pivotXType,float pivotXValue,
            int pivotYType,float pivotYValue
         )
```

Syntax

Scale Animation contains 3 constructors

```
TranslateAnimation(
            float fromXDelta, float toXDelta,
            float fromYDelta, float toYDelta
        )
```

```
TranslateAnimation(
            int fromXType, float fromXValue,
            int toXType,   float toXValue,
            int fromYType, float fromYValue,
            int toYType,   float toYValue
        )
```

Syntax

Translate Animation contains 2 constructors

```
RotateAnimation(
          float fromDegrees, float toDegrees
          )
```

```
RotateAnimation(
          float fromDegrees, float toDegrees,
          float pivotX,       float pivotY
          )
```

```
RotateAnimation(
          float fromDegrees, float toDegrees,
          int   pivotXType,    float pivotXValue,
          int   pivotYType,    float pivotYValue
          )
```
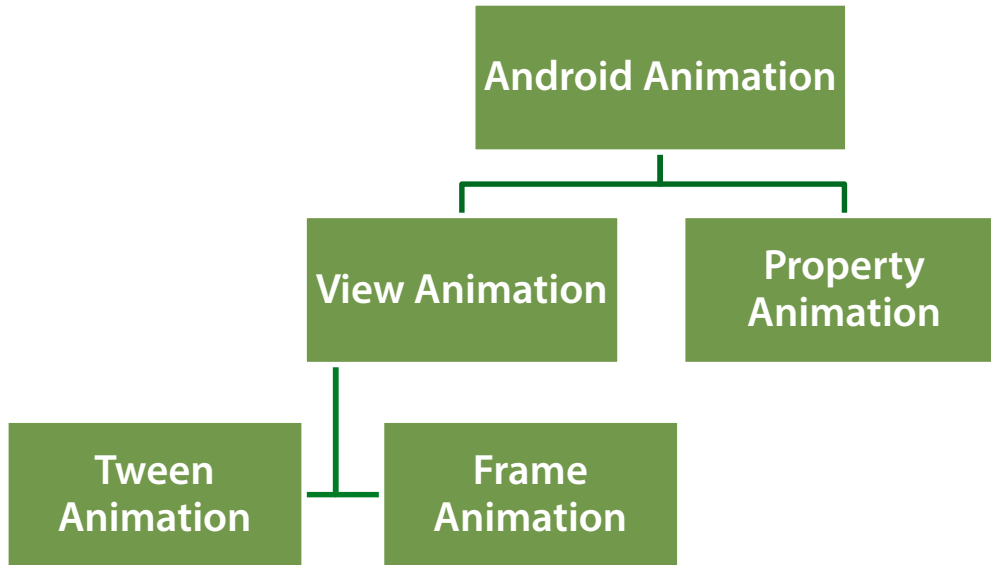
Syntax

Rotate Animation contains 3 constructors

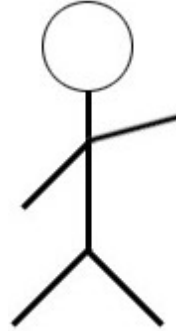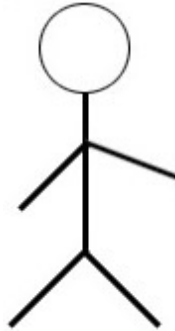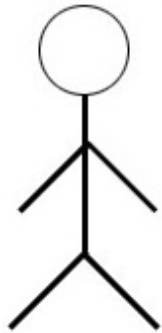# Tween Animation by Java

Frame Animation

Android Animation

Frame Animation

An animation defined in XML that shows a sequence of images in order (like a film).

File Location

res/drawable/filename.xml

Elements

\<animation-list\>
- This is the root element containing one or more \<item\> element.

Attributes:

android:oneshot

Boolean.

true – To perform animation once
false – To loop the animation

Elements

<item>
    - A single frame of animation. Must be the child of <animation-list> element.

Attributes:
        android:drawable
                Drawable Resource.
        android:duration
                Integer. - The duration to show a frame in *milliseconds*.

Demerit of View Animation

Summary

View Animation –

- Tween Animation by Java and XML
- Frame Animation

Animation Listener

Demerit of View Animation