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Exploring Low-Level Animations

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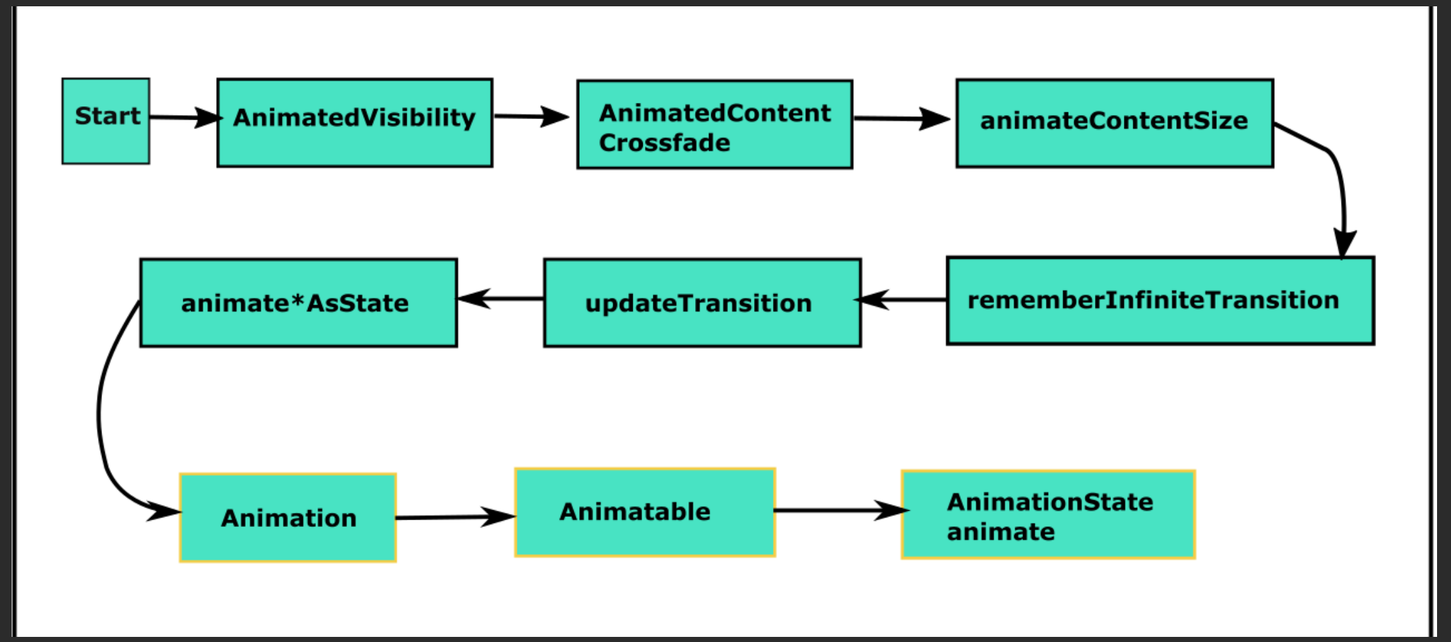
Section Overview

- Low-Level Animations
  - Animation
  - Animatable
  - animate
  - AnimationState
- Code
- Recap



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Animation

- Lowest animation API
- A core animation engine
- Has two subtypes:
  - TargetBasedAnimation
  - DecayAnimation
- They usually run in a coroutine

```
TargetBasedAnimation(
    animationSpec = tween(ANIM_DURATION),
    typeConverter = Int.VectorConverter,
    initialValue = 1,
    initialVelocity = 1,
    targetValue = 1000
)

DecayAnimation(
    animationSpec = exponentialDecay(),
    typeConverter =
Float.VectorConverter,
    initialValue = 100f,
    initialVelocity = 4000f
)
```

Animatable

- Value holder
- API backing up animate*AsState
- Useful for implementing touch-based animation
- Animation via:
  - animateTo
  - snapTo
  - animateDecay

```
val offset = remember {
    Animatable(
        initialValue = Offset(0f, 0f),
       typeConverter  =
Offset.VectorConverter
    )
}

coroutineScope {
   val position = //Get position
   launch {
     offset.animateTo(position)
   }

}
```

animate

- A target-based animation
- Animate from initialValue to targetValue with optional velocity
- Customize with animationSpec

```
//Animate translate
animate(
    initialValue = 50f,
    targetValue = 200f,
    animationSpec = infiniteRepeatable(
          animation = tween(durationMillis =
ANIMATION_DURATION),
          repeatMode = RepeatMode.Reverse
      )
) { value, velocity ->
    translate = value
}
```

AnimationState

- Holds the state of an animation
- Can be queried for initial value, initial velocity, and isRunning
- Must be launched in a coroutine scope

```
//Make animation
val animState = remember {
 AnimationState(
    typeConverter =
 Color.VectorConverter(ColorSpaces.AdobeRgb),
     initialValue = Color.Cyan
 )
}
// Run animation
animationState.animateTo(
    targetValue = Color.Green
)
```

Code Time

- Folder : s4-exploring-lowlevel-animations/starter-project
- Files:
  - AnimationSheet.kt
    - TargetBasedAnimation
    - DecayAnimation
  - AnimatableSheet.kt
    - Animatable
  - AnimationStateOrAnimateSheet.kt
    - AnimationState
    - animate

Section Summary

- Low-Level Animations
  - Animation
  - Animatable
  - animate
  - AnimationState
- Now, you are familiar with all Compose animation APIs and how to use them

Apply what we have learned so far on a real-world app

Up Next

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