

Custom View Positioning and Sizing



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ANDROID ARCHITECT

@brendanwanlass



Overview



Understanding `onMeasure()`

Measuring your view

Custom sizing with attributes

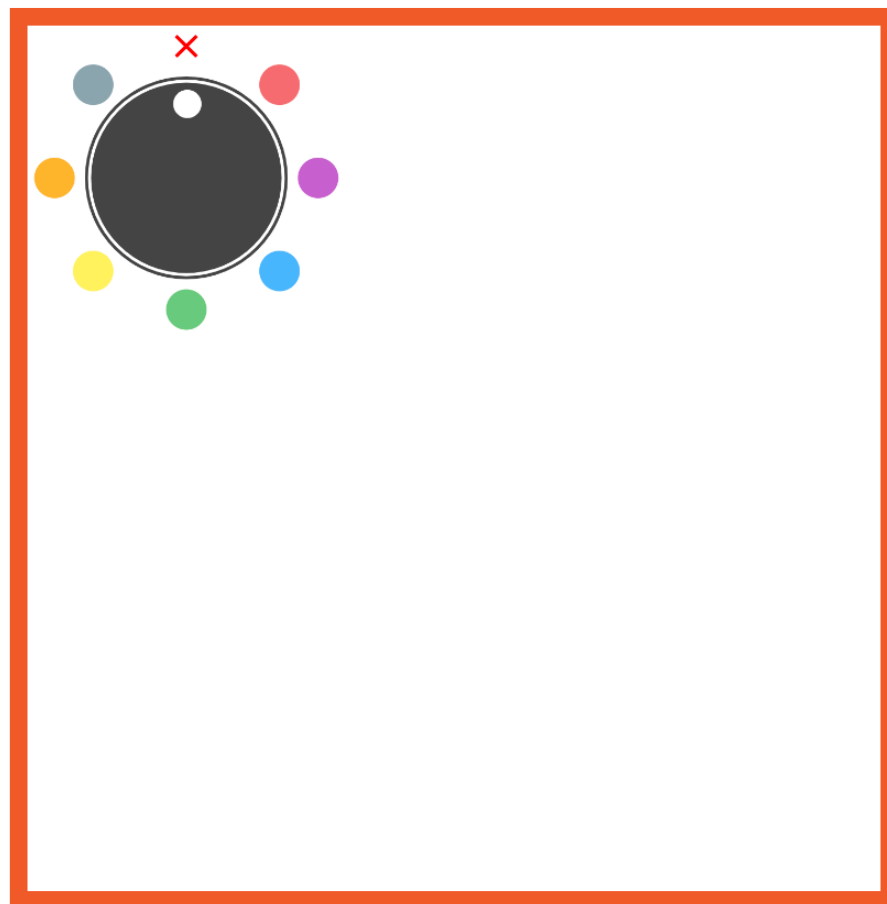
Making your view size flexible



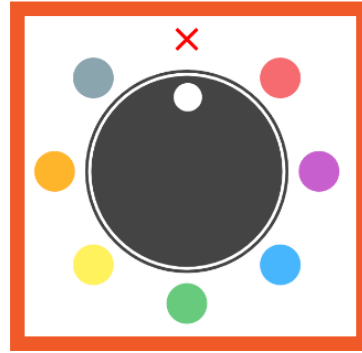
Understanding onMeasure()



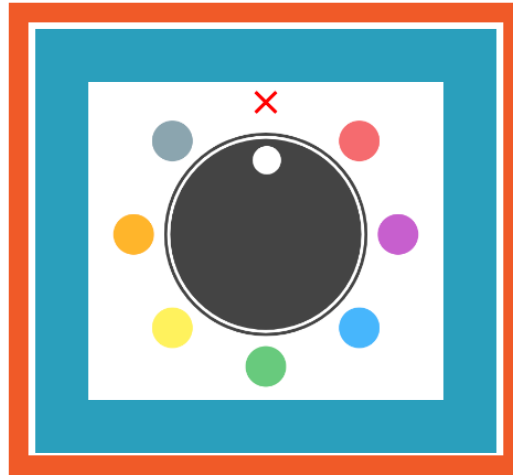
Default Behavior



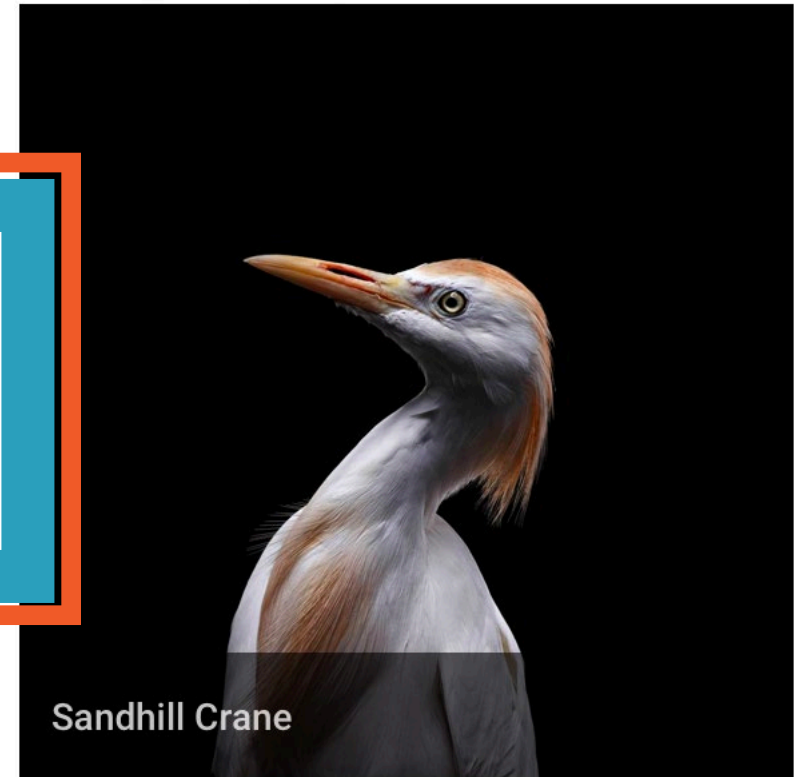
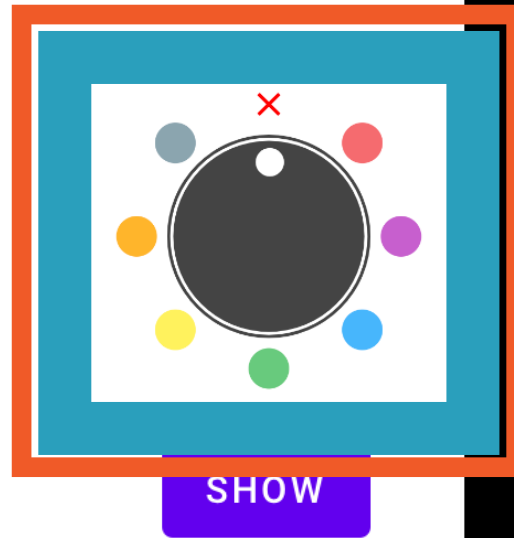
Behavior with onMeasure()



Behavior with onMeasure()



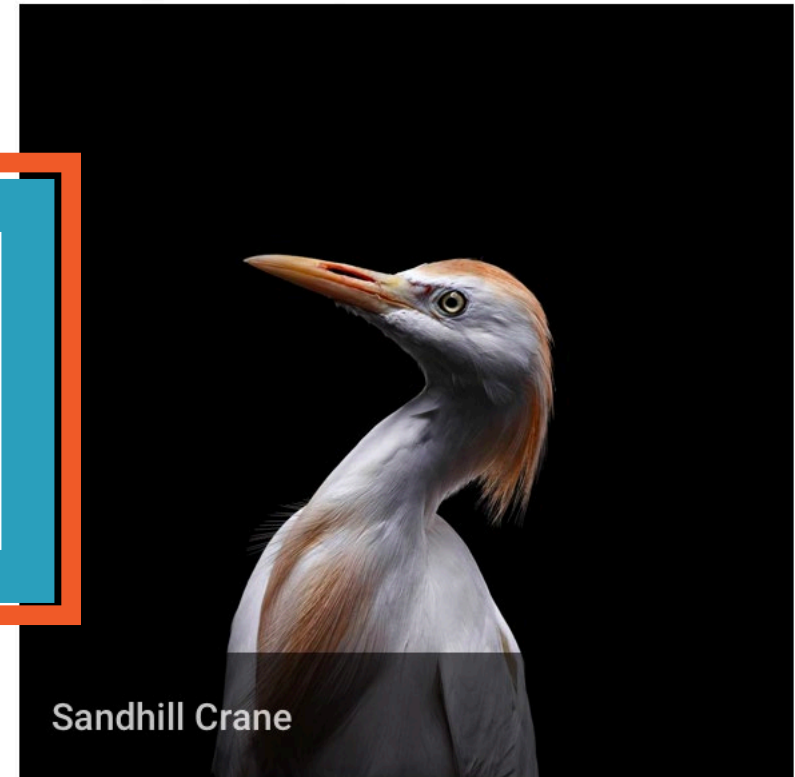
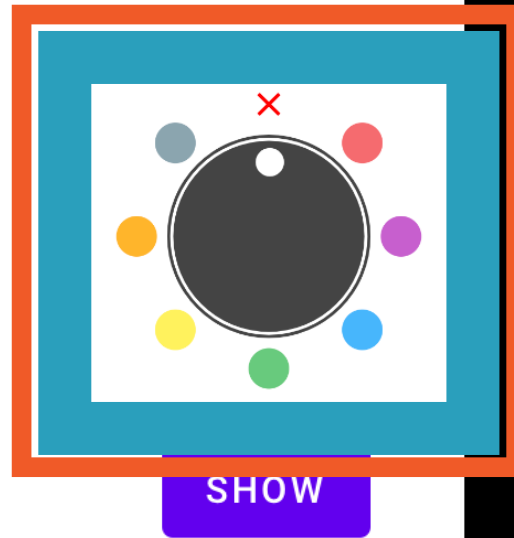
Behavior with onMeasure()



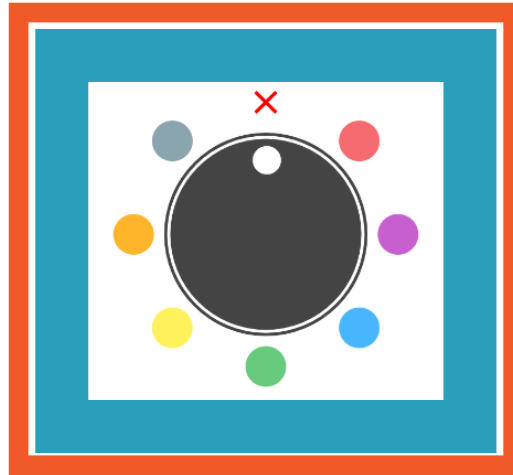
Compromise



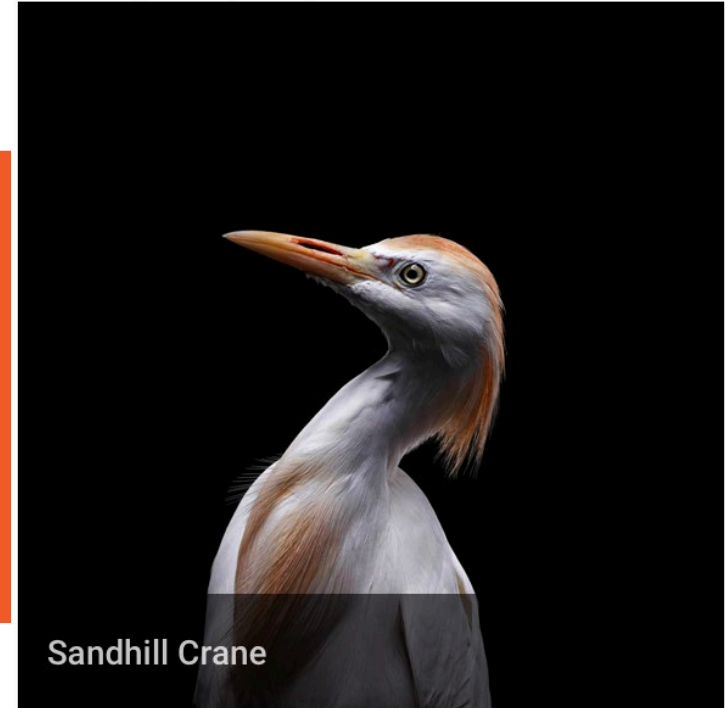
Behavior with onMeasure()



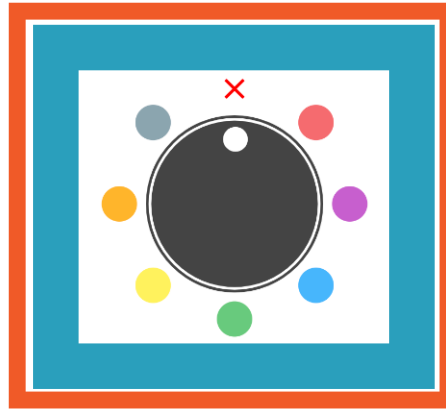
Behavior with onMeasure()



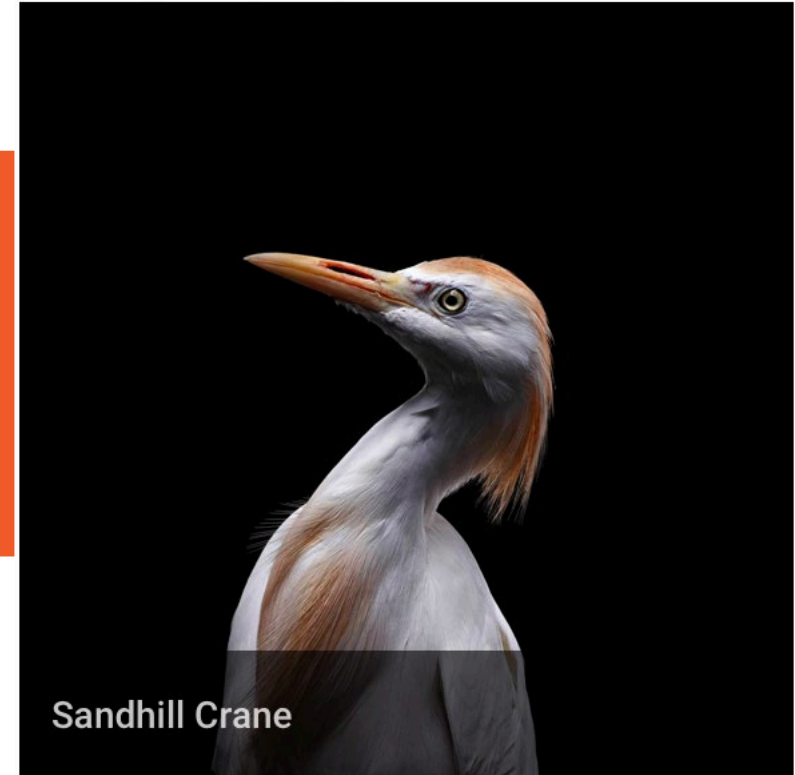
SHOW



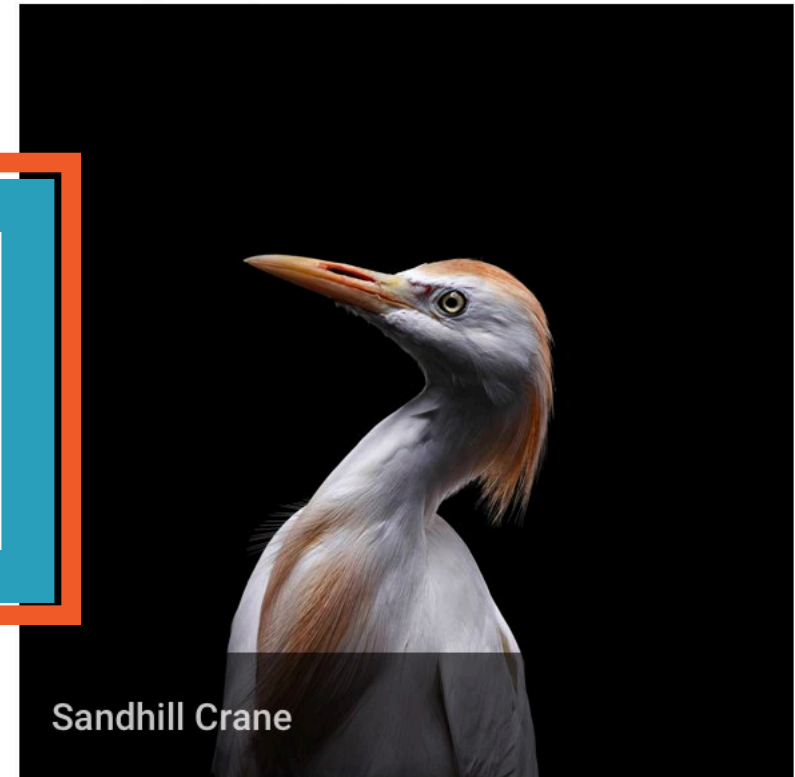
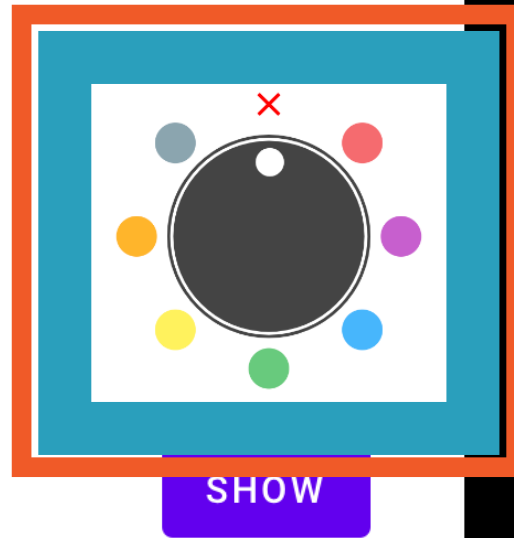
Behavior with onMeasure()



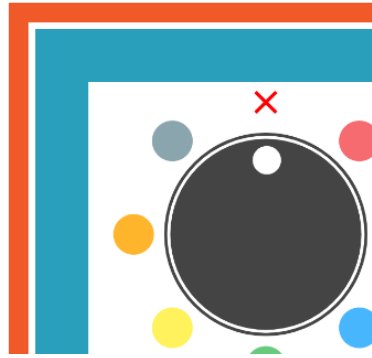
SHOW



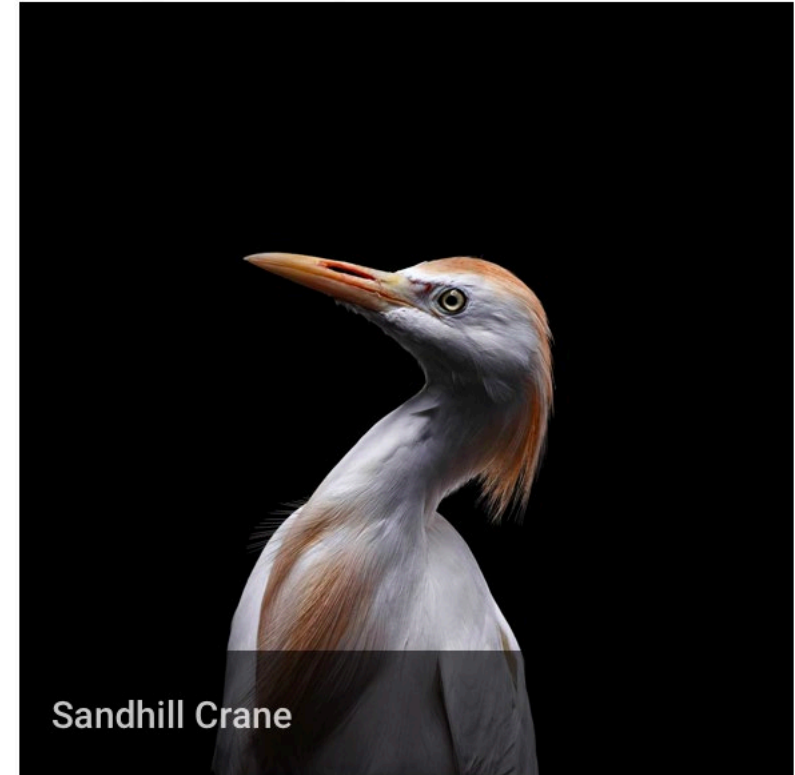
Behavior with onMeasure()



Behavior with onMeasure()



SHOW



onMeasure()

```
override fun onMeasure(widthMeasureSpec: Int,  
                        heightMeasureSpec: Int) {  
  
}
```



onMeasure()

heightMeasureSpec: Int -2147481536



Compound Bit Shifted Integer Variables



onMeasure()

heightMeasureSpec: Int -2147481536



onMeasure()

heightMeasureSpec: Int -2147481536



Mode



Size



onMeasure()

Size

heightMeasureSpec: Int

Mode



onMeasure()

Size

Number of pixels

heightMeasureSpec: Int

Mode



onMeasure()

Size

heightMeasureSpec: Int

Mode

EXACTLY

AT_MOST

UNSPECIFIED



onMeasure()

Mode

EXACTLY

`android:layout_width="171dp"`

AT_MOST

UNSPECIFIED



onMeasure()

	EXACTLY	
Mode	AT_MOST	<code>android:layout_width="wrap_content"</code>
	UNSPECIFIED	



onMeasure()

Mode

EXACTLY

AT_MOST

UNSPECIFIED



onMeasure()

```
override fun onMeasure(widthMeasureSpec: Int,  
                        heightMeasureSpec: Int) {  
  
}
```



onMeasure()

```
override fun onMeasure(widthMeasureSpec: Int,  
                        heightMeasureSpec: Int) {  
  
    setMeasuredDimension(width, height)  
}
```



onMeasure()

```
override fun onMeasure(widthMeasureSpec: Int,  
                        heightMeasureSpec: Int) {  
  
    //Figure out width and height  
    setMeasuredDimension(width, height)  
}
```



Measuring Your View



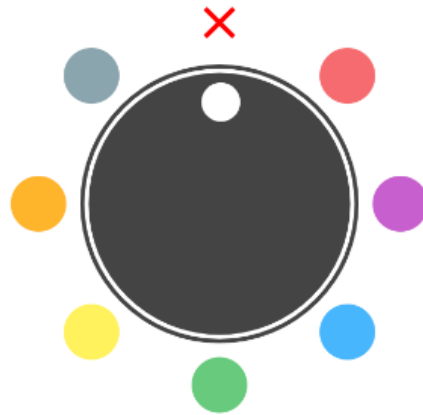
<Live Coding>



Custom Sizing with Attributes



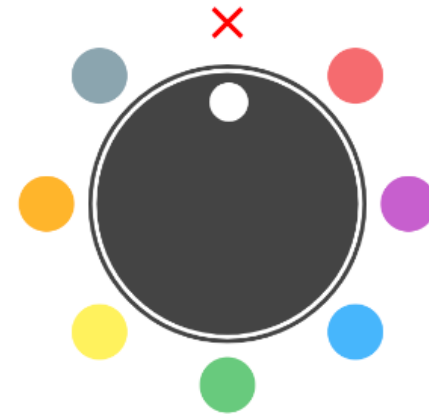
Color Dial



Color Dial



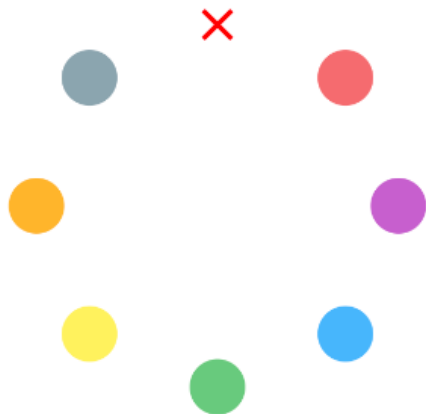
Dial Diameter



Color Dial

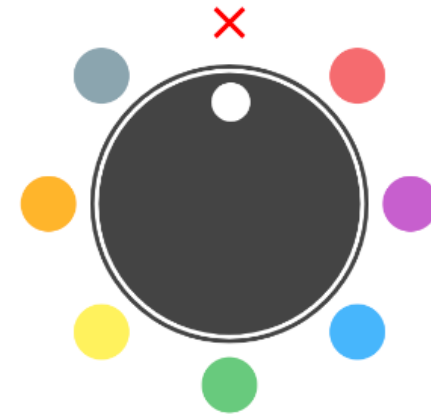


Dial Diameter



Tick Mark Size

Extra Padding



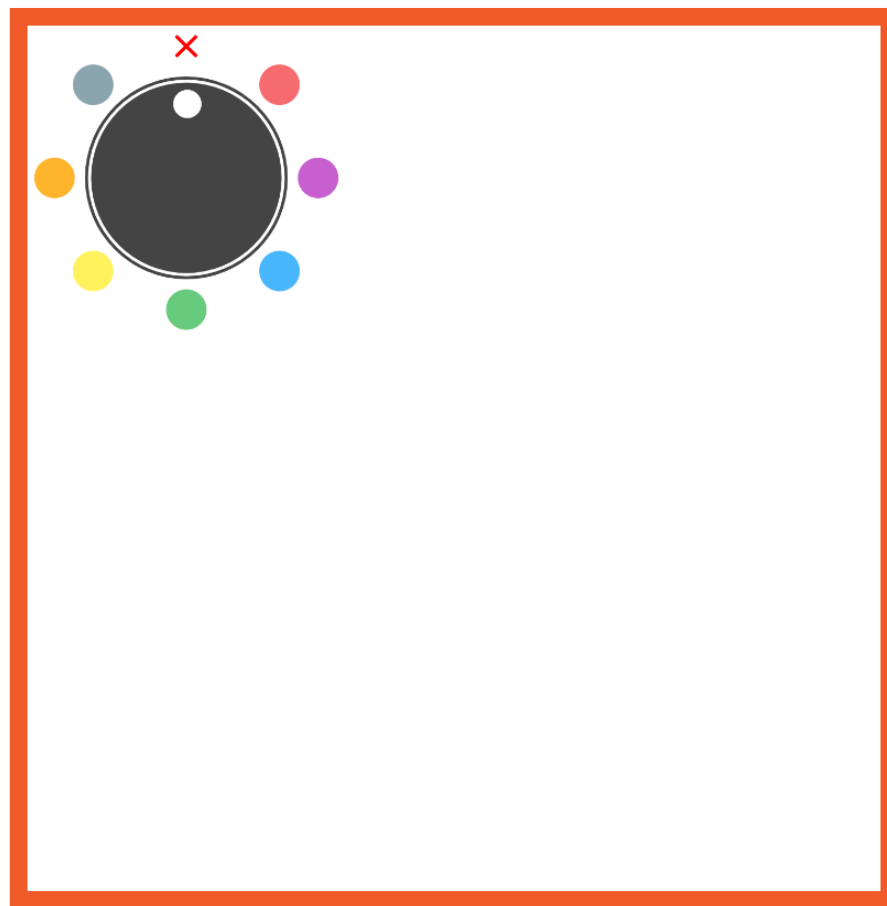
<Live Coding>



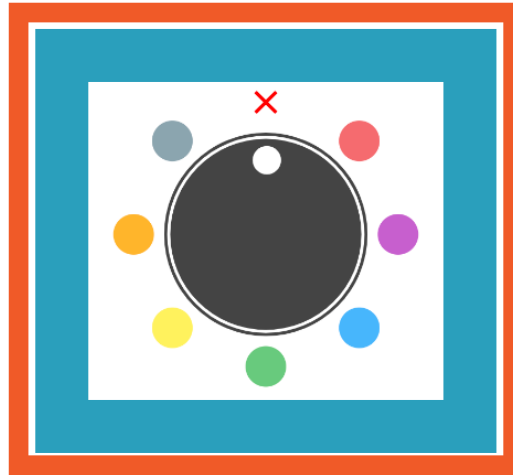
Making Your View Size Flexible



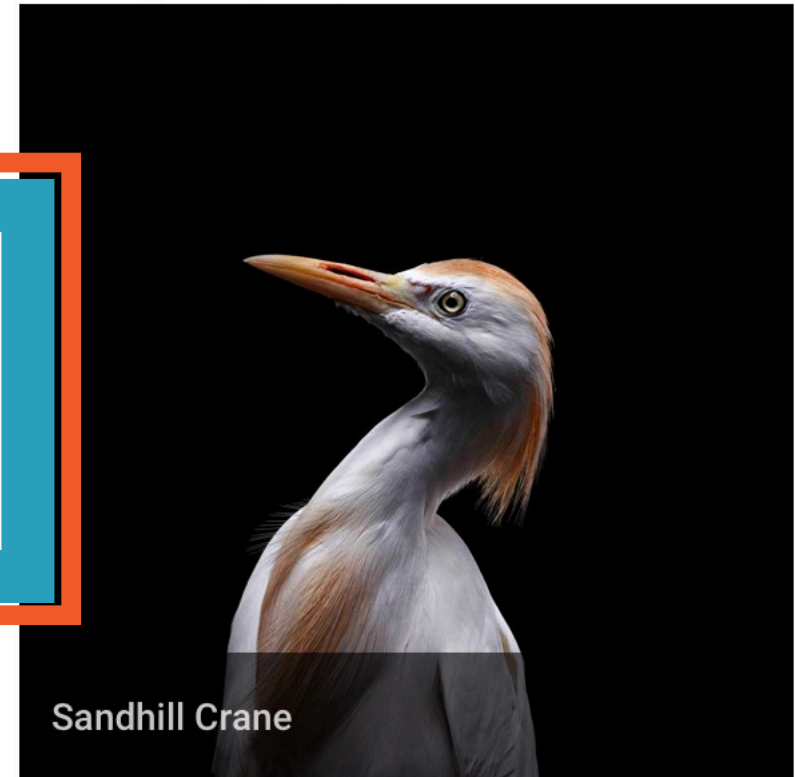
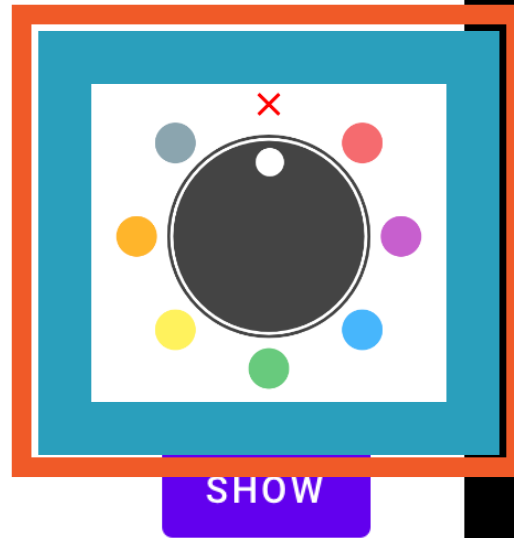
Default Behavior



Behavior with onMeasure()



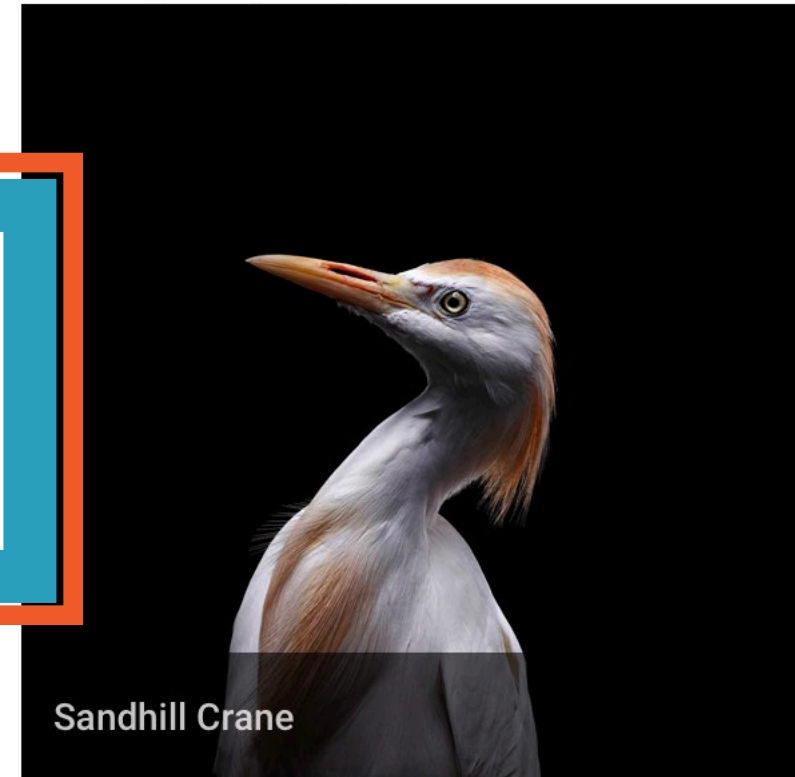
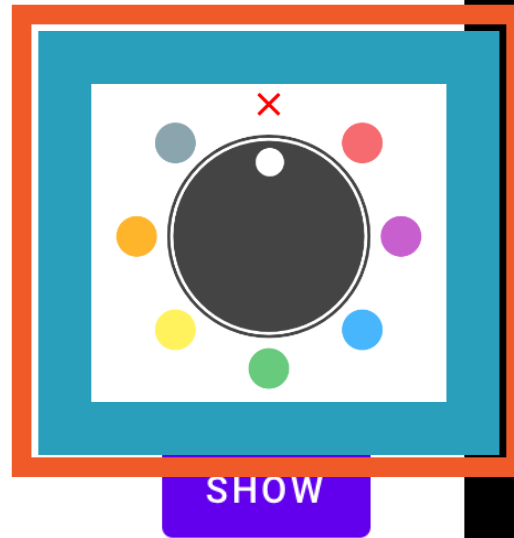
Behavior with onMeasure()



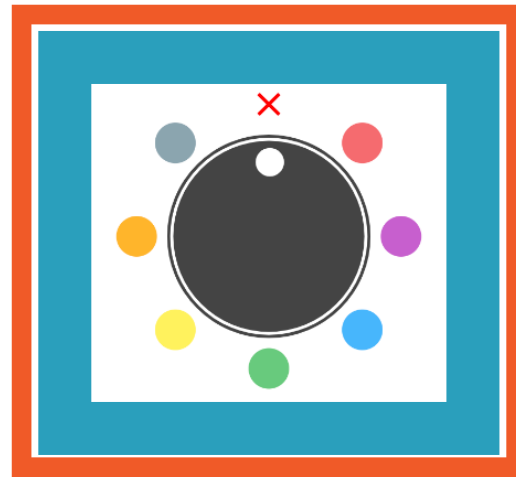
Compromise



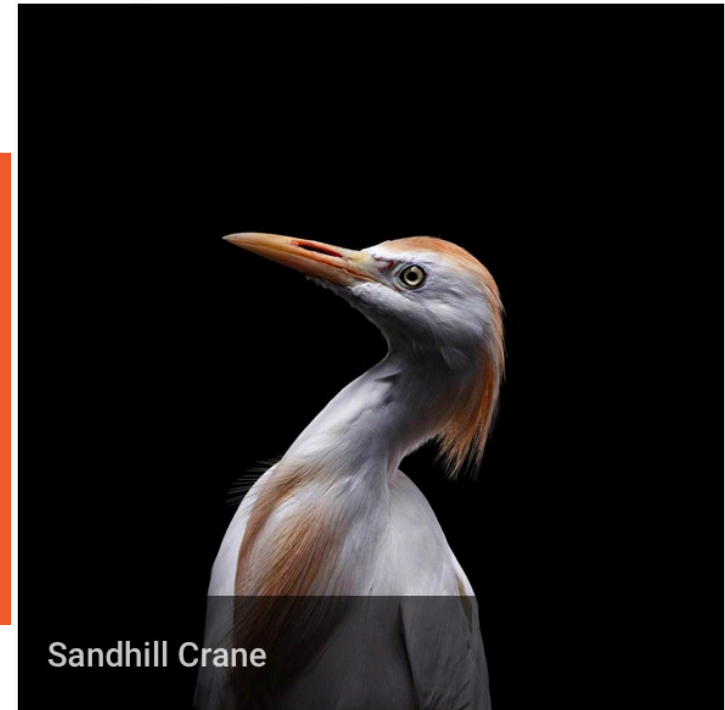
Behavior with onMeasure()



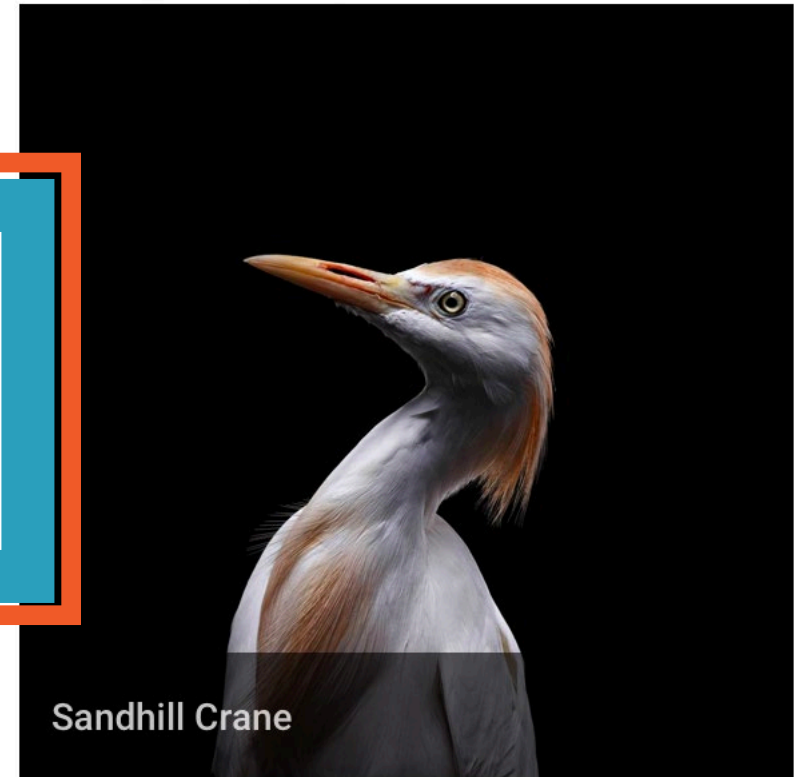
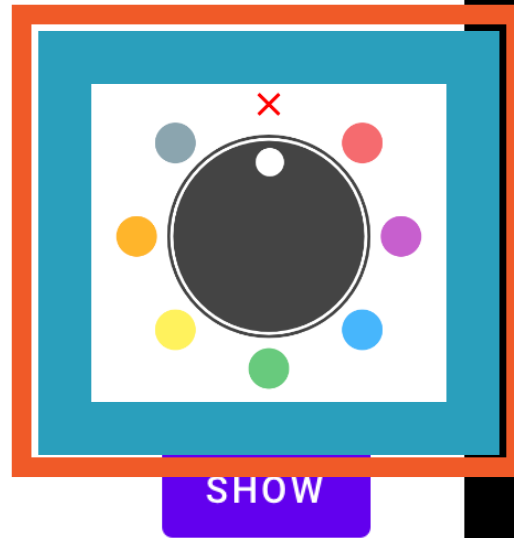
Behavior with onMeasure()



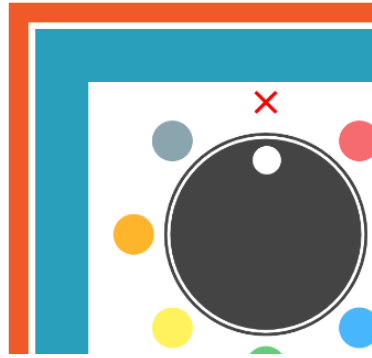
SHOW



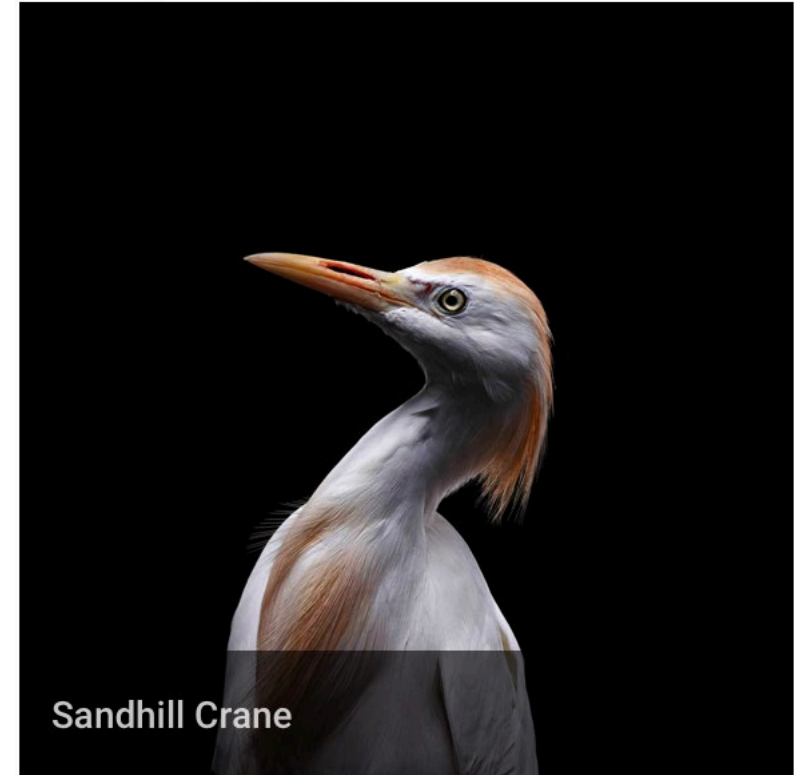
Behavior with onMeasure()



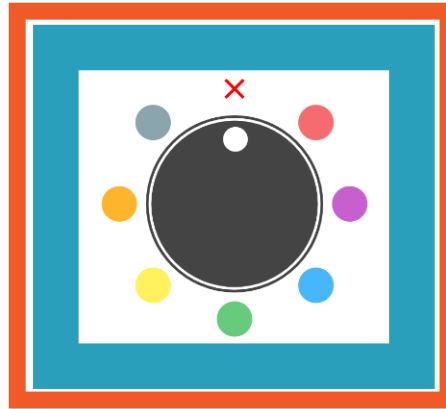
Behavior with onMeasure()



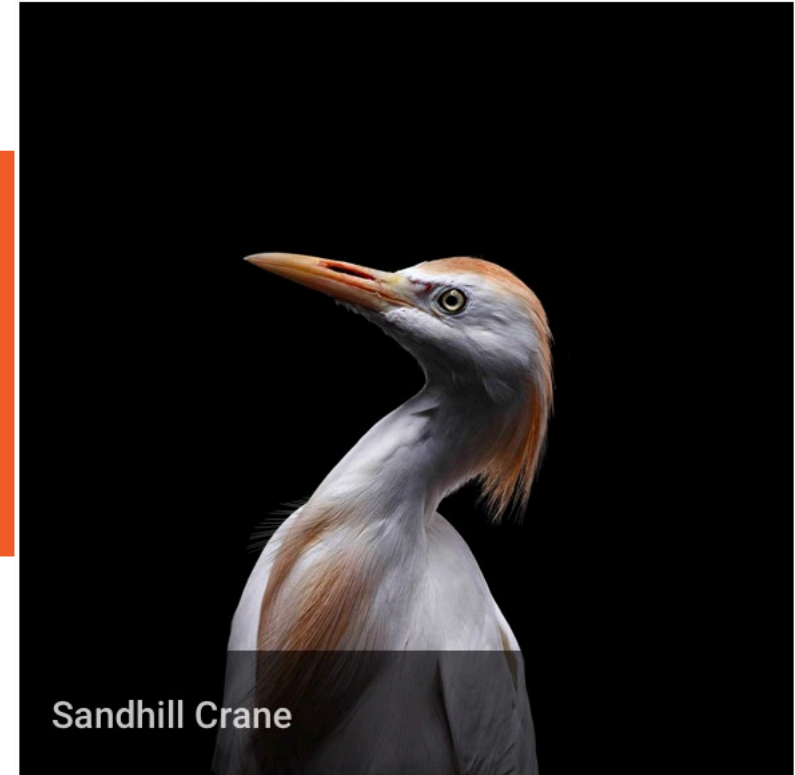
SHOW



Behavior with onMeasure()



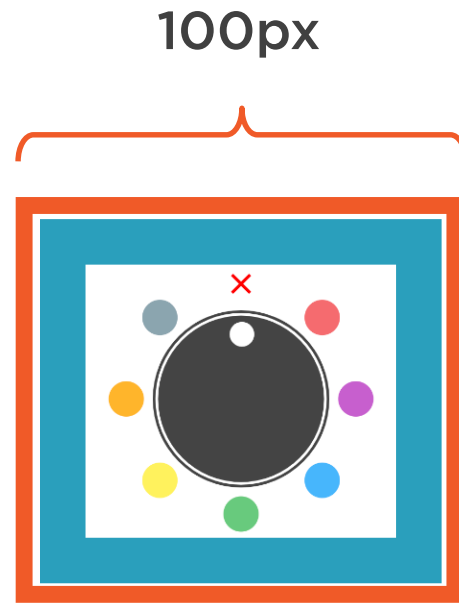
SHOW



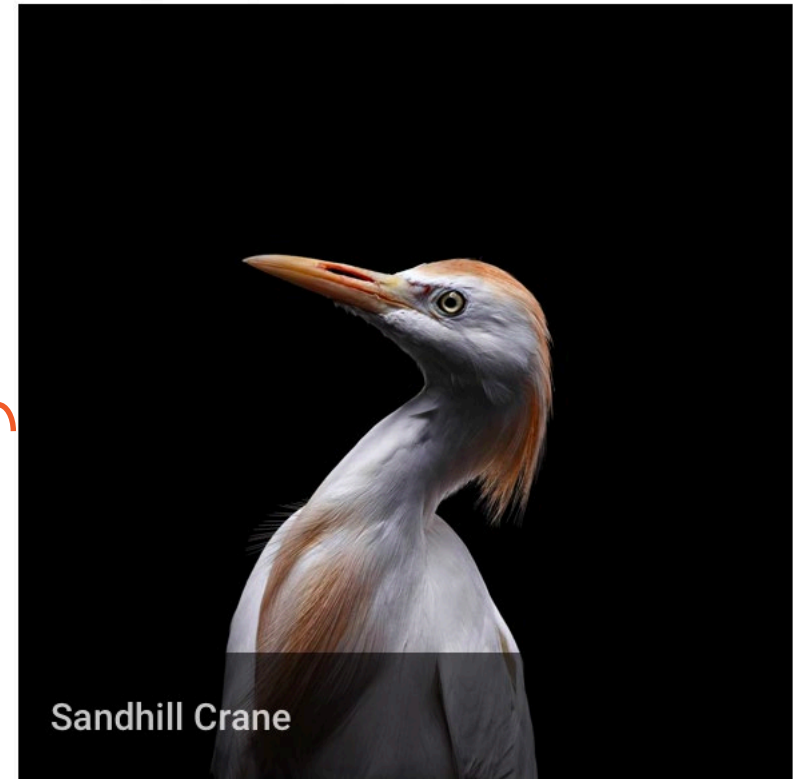
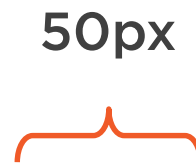
<Live Coding>



Figuring Out Scale



SHOW

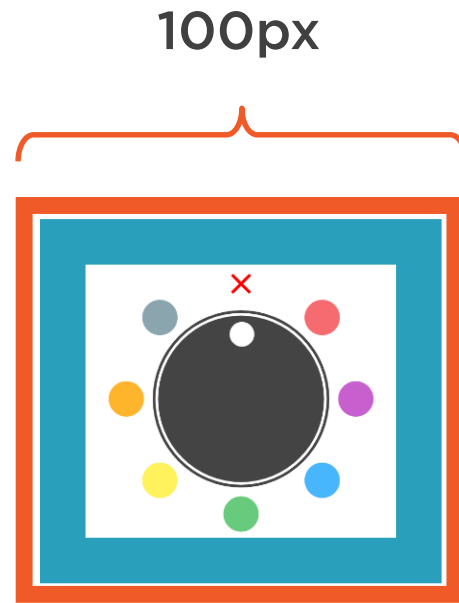


Figuring Out Scale

$$50\text{px} / 100\text{px} = 0.5$$



Figuring Out Scale



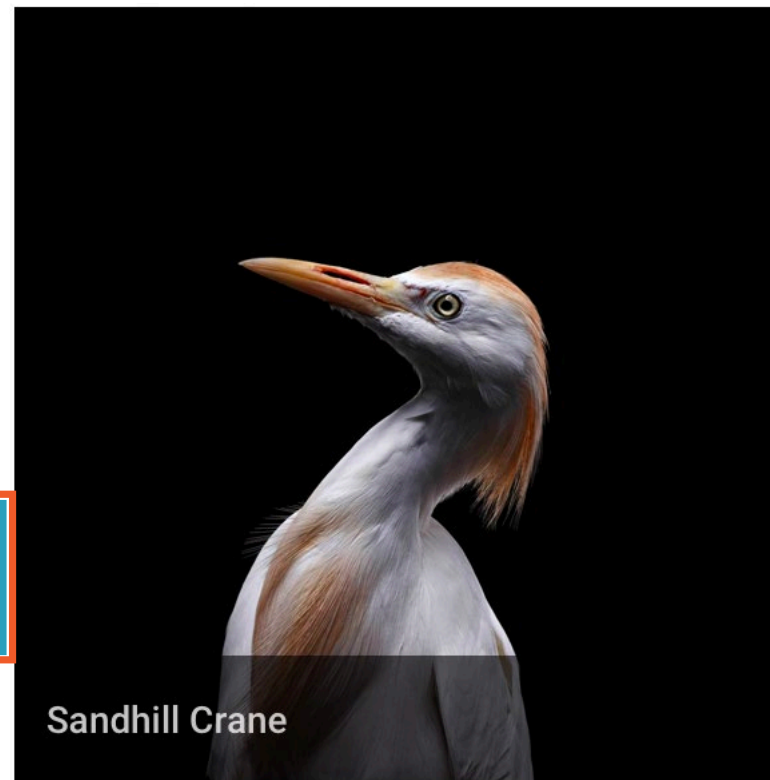
SHOW

50px

A diagram showing a rectangular image of a Sandhill Crane. An orange bracket below the image indicates a width of 50px.



Figuring Out Scale



<Live Coding>



Summary



Understanding `onMeasure()`

Measuring your view

Custom sizing with attributes

Making your view size flexible



Next Up: Making Your View Interactive

