



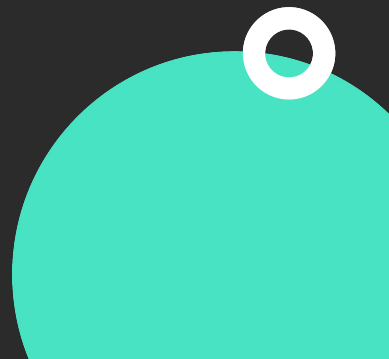
# Draw and Animate on Canvas with Jetpack Compose in Android Part 1



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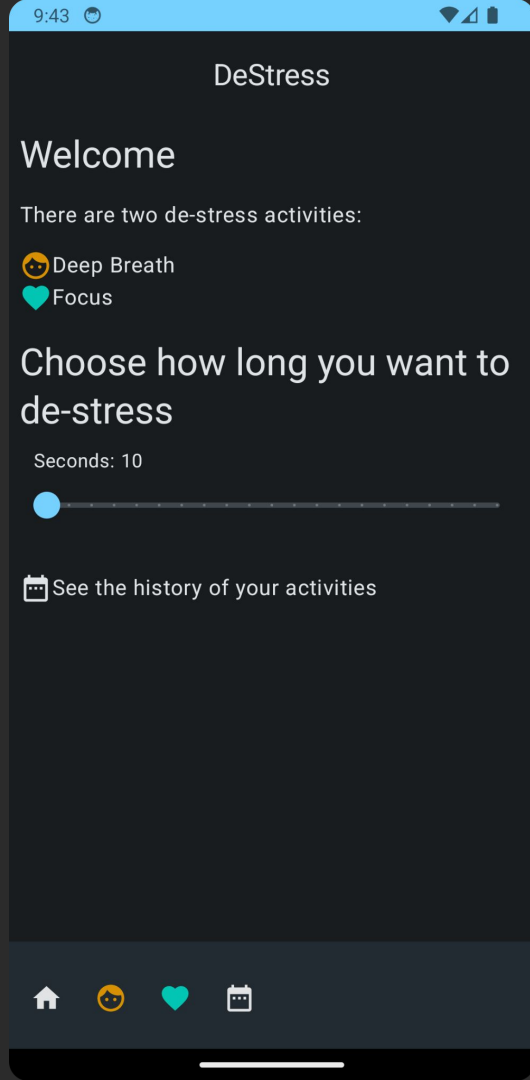
# Overview

- Introduction to the **project app**: DeStress
- **Theory**
  - **Canvas** and **DrawScope**
  - **Modifiers**
  - **Pixels** vs **dp**
  - **Coordinate** system
- **Implementation**
  - **Breath** screen
  - **History** screen
- **Coding challenge**
- Introduction to **part 2**

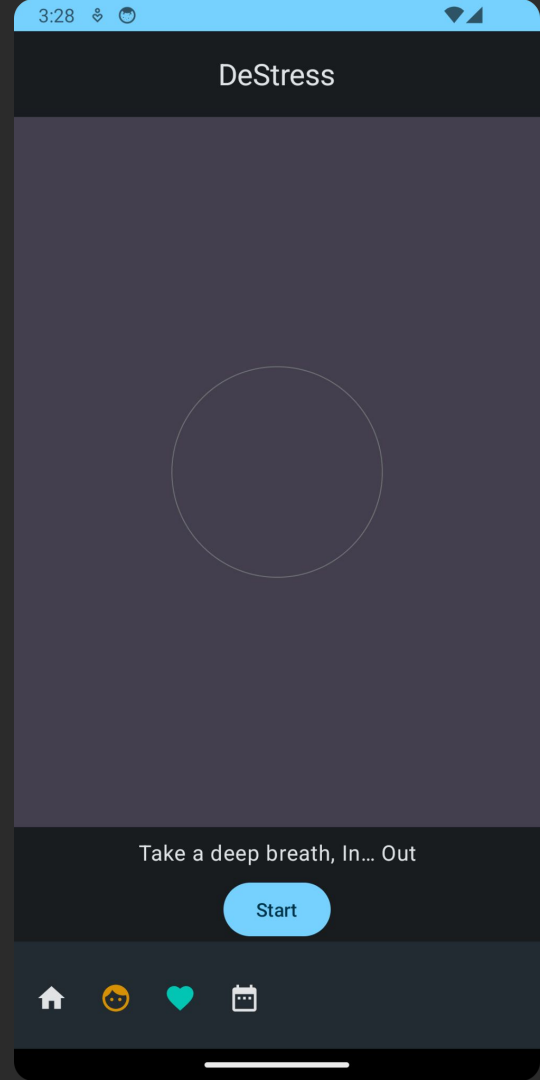
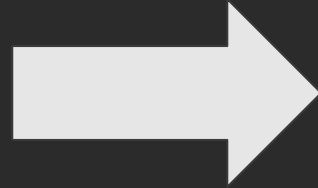


# Course Demo App

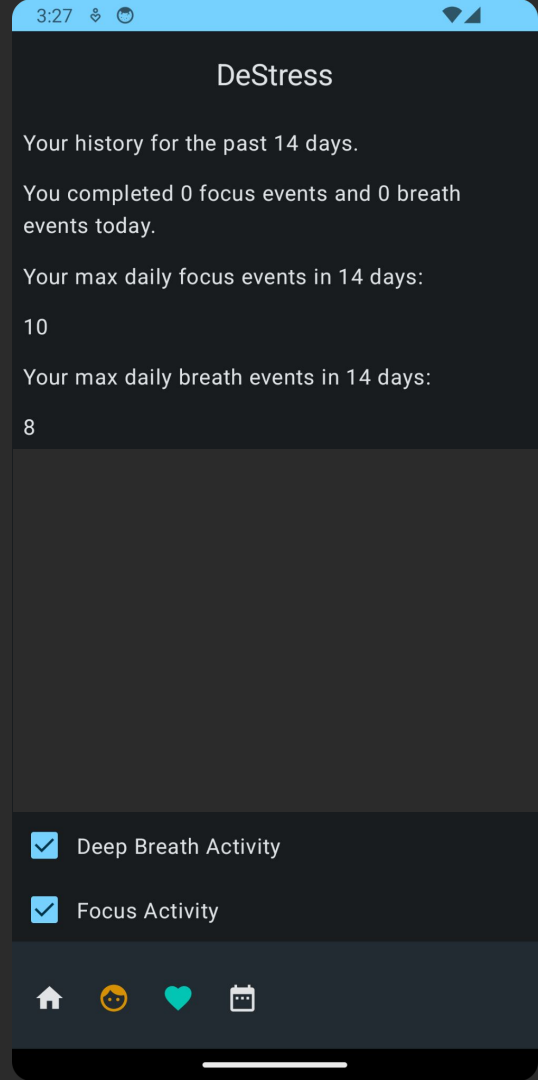
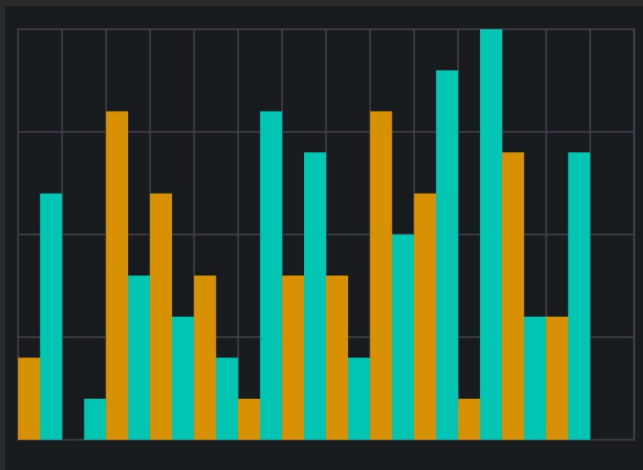
- Build the **custom components** of the DeStress App
- **Timer, Navigation, ViewModel** and basic screens are **provided**
- Implement the **Breath, History** from the provided designs in part one
- Implement the **Focus** screen from the provided designs in part two



# Course Demo App - Breath



# Course Demo App - History



# Canvas

- Convenient Composable to draw onto the screen
- **Spacer** with **drawBehind** modifier
- onDraw is a function with receiver **DrawScope**
- **DrawScope** is available as *this* in the body of the onDraw function

```
Canvas {  
    // control the canvas and draw here  
}  
  
@Composable  
fun Canvas(modifier: Modifier,  
           onDraw: DrawScope -> ()  
           ) =  
    Spacer(modifier.drawBehind(onDraw()))
```



# DrawScope

- Interface
- **Stateless**
- **Declarative**
- drawing environment
- Functions e.g.
  - drawCircle
  - drawLine
  - drawRect
  - and more

```
Canvas(modifier.fillMaxSize()) {  
    // access the DrawScope with this  
    this.drawCircle(...)  
    drawLine(..)  
    drawRect(...)  
    drawPath(...)  
}
```



# Modifiers - drawBehind

```
Box(modifier.drawBehind {  
    drawCircle(...)  
    drawLine(..)  
    drawRect(...)  
    drawPath(...)  
}) {  
    // content of box  
}
```





# Modifiers - drawWithContent

```
Box(modifier.drawWithContent {  
    drawCircle(...)  
    drawLine(..)  
    drawRect(...)  
    drawContent()  
    drawPath(...)  
}) {  
    // content of box  
}
```



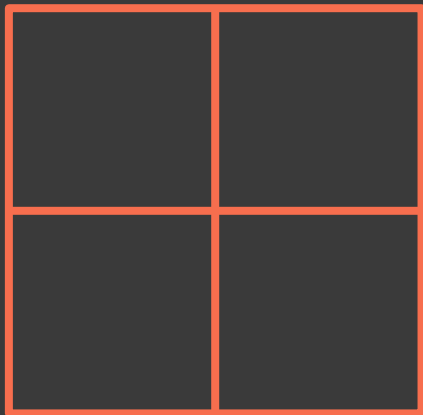
# Modifiers - drawWithCache

```
Box(modifier.drawWithCache { // provides CacheDrawScope
    val brush = Brush.linearGradient(...)
    onDrawBehind {
        drawRect(brush)
    }
    onDrawWithContent {
        // control draw order
    }
}) {
    // content of box
}
```

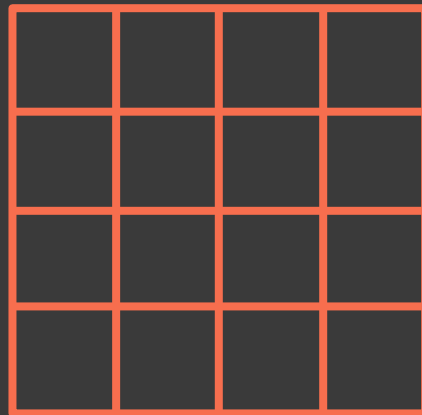


# Density independent pixels vs Pixels

`2.dp.toPx()`



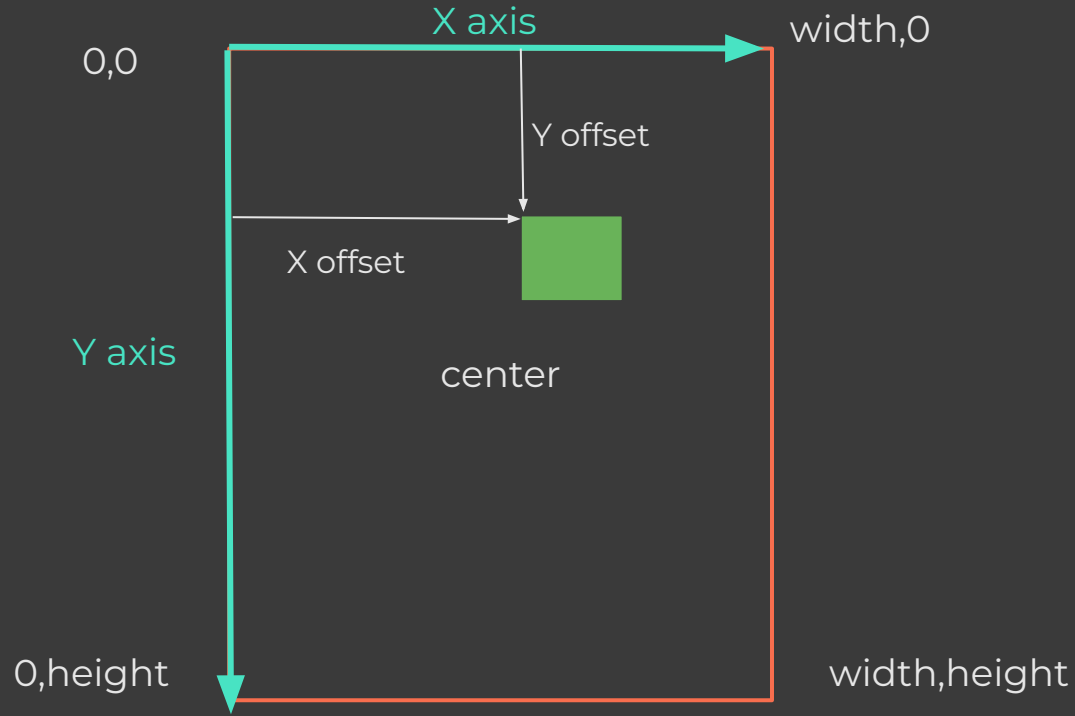
1:1 2 dp = 2 Pixels



1:2 2 dp = 4 Pixels



# Coordinate system





# Let's build something

Up Next





# Coding Challenge





# Coding Challenge Solution☀



# Summary

- Introduction to the **project app**: DeStress
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  - **Modifiers**
  - **Pixels** vs **dp**
  - **Coordinate** system
- **Implementation**
  - **Breath** screen
    - **drawCircle**, **Stroke**, **Fill**, gradient **Brush**
    - **Animations**
  - **History** screen
    - **drawLine**, **drawRect**
- **Coding challenge**







# Implement the custom **Focus** animation composable

Up Next





# See you in Part 2



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