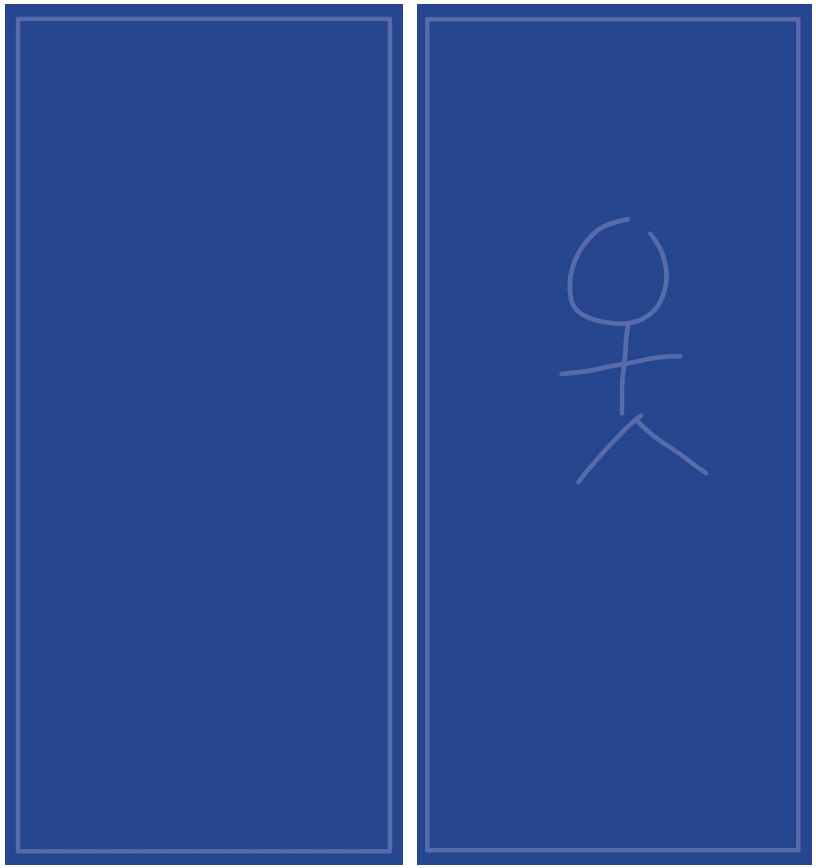
Lecture 19: Canvas
IN721: Design and Development of Applications for Mobile Devices
Semester One, 2020

Kaiako: Grayson Orr

Te Kura Matatini ki Otago, Ōtepoti, Aotearoa

Friday, 22 May

Expected Output



Custom View

- MyCanvasView.kt - custom view class
- Companion object - STROKE_WIDTH = 12f

```
class MyCanvasView(context: Context) : View(context) {

    private lateinit var extraCanvas: Canvas
    private lateinit var extraBitmap: Bitmap
    private lateinit var frame: Rect

    private val drawColor: Int = ResourcesCompat.getColor(resources, R.color.colorPaint,  theme: null)
    private val backgroundColor: Int = ResourcesCompat.getColor(resources, R.color.colorBackground,  theme: null)
    private var path = Path()
    private val paint: Paint = Paint().apply { this: Paint
        color = drawColor
        isAntiAlias = true
        isDither = true
        style = Paint.Style.STROKE
        strokeJoin = Paint.Join.ROUND
        strokeCap = Paint.Cap.ROUND
        strokeWidth = Companion.STROKE_WIDTH
    }
    private val touchTolerance: Int = ViewConfiguration.get(context).scaledTouchSlop

    private var currentX = 0f
    private var currentY = 0f
    private var motionTouchEventX = 0f
    private var motionTouchEventY = 0f
```

Custom View

- override function - onDraw
- override function - onTouchEvent

```
override fun onDraw(canvas: Canvas) {
    canvas.drawBitmap(extraBitmap,  left: 0f,  top: 0f,  paint: null)
    extraCanvas.drawRect(frame, paint)
}

override fun onTouchEvent(event: MotionEvent): Boolean {
    motionTouchEventX = event.x
    motionTouchEventY = event.y

    when (event.action) {
        MotionEvent.ACTION_DOWN -> touchStart()
        MotionEvent.ACTION_MOVE -> touchMove()
        MotionEvent.ACTION_UP -> touchUp()
    }
    return true
}
```

Custom View

- function - touchMove
- function - touchUp

```
private fun touchMove() {
    val dx: Float = abs( x: motionTouchEventX - currentX)
    val dy: Float = abs( x: motionTouchEventY - currentY)
    if (dx >= touchTolerance || dy >= touchTolerance) {
        path.quadTo(currentX, currentY,  x2: (motionTouchEventX + currentX) / 2,
                y2: (motionTouchEventY + currentY) / 2)
        currentX = motionTouchEventX
        currentY = motionTouchEventY
        extraCanvas.drawPath(path, paint)
    }
    invalidate()
}

private fun touchUp() {
    path.reset()
}
```

Custom View

- MainActivity.kt
- What is difference about this activity from previous activities you have created?

```
class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        val mCanvasView = MyCanvasView( context: this@MainActivity)
        mCanvasView.systemUiVisibility = SYSTEM_UI_FLAG_FULLSCREEN
        setContentView(mCanvasView)
    }
}
```