Session 3: Lab – Profile Card Console Program

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Session: Session 3 – Kotlin Project Lab

Topics Involved: This lab involves data classes, functions, loops, string templates, conditional rendering, and formatted console UI layout design.

Program Code

```kotlin
data class Profile(val name: String, val title: String, val bio: String)

fun renderAvatar(width: Int, height: Int): String {
    val builder = StringBuilder()
    val border = "+" + "-".repeat(width - 2) + "+\n"

    builder.append(border)
    for (i in 1..height) {
        val content = if (i == height / 2 + 1) {
            val text = "Avatar ${width}x$height"
            val padding = (width - 2 - text.length) / 2
            " ".repeat(padding) + text +
            " ".repeat(width - 2 - padding - text.length)
        } else {
            " ".repeat(width - 2)
        }
        builder.append("|$content|\n")
    }
    builder.append(border)
    return builder.toString()
}

fun renderTextBlock(label: String, text: String, width: Int): String {
    val maxWidth = width - 4
    val trimmed = if (text.length > maxWidth) {
        text.substring(0, maxWidth)
    } else text

    val line = "$label: $trimmed"
    val padded = line.padEnd(width - 2, ' ')
    return "| $padded|\n"
}

fun renderProfile(profile: Profile, width: Int = 30, showAvatar: Boolean = true): String {
    val builder = StringBuilder()
    val border = "+" + "-".repeat(width - 2) + "+\n"

    builder.append(border)

    if (showAvatar) {
        val avatar = renderAvatar(width, 3)
```

```kotlin
        builder.append(avatar.removeSuffix(border))
    }

    builder.append(renderTextBlock("Name", profile.name, width))
    builder.append(renderTextBlock("Title", profile.title, width))
    builder.append(renderTextBlock("Bio", profile.bio, width))

    builder.append(border)
    return builder.toString()
}

fun main() {
    val profile1 = Profile("Ada Lovelace", "Software Dev", "Early computing pioneer")
    val profile2 = Profile("Alan Turing", "Mathematician", "Father of theoretical CS")
    val profile3 = Profile("Katherine Johnson", "NASA Scientist", "Orbital mechanics expert")

    println(renderProfile(profile1, 30, true))
    println(renderProfile(profile2, 30, false))
    println(renderProfile(profile3, 30, true))
}
```