CMPS 312 Mobile Application Development

Lab 5 – Displaying Lists

Objective

In this lab you will practice

- Building UI with Compose
- Manage state in composable functions
- Display lists using LazyColumn

Part A - Tip Calculator App

Create a new project place it under **`Lab5-TipCalculatorApp`** folder on your GitHub repo. Name the project "TipCalculator". Use `cmps312.tipcalculator` as the package. Select *Empty Compose Activity* as the project template.

The App UI should be as shown in Figure 1.

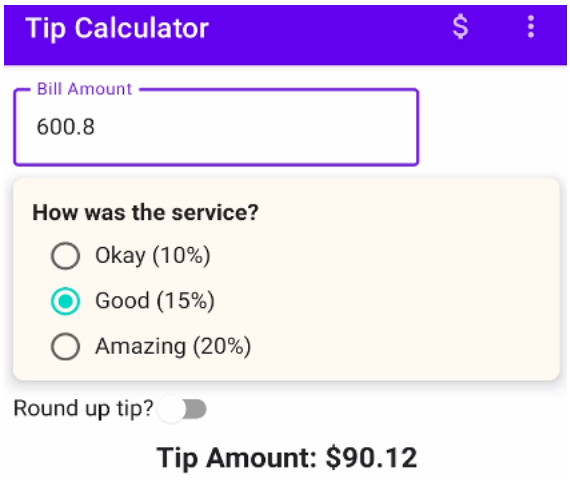


Figure 1. Tip Calculator App

Part B – Stadium App

In Part B you will build the Stadiums App shown in Figure 2 by reading the stadiums details from a json file then displaying them in a LazyColumn.

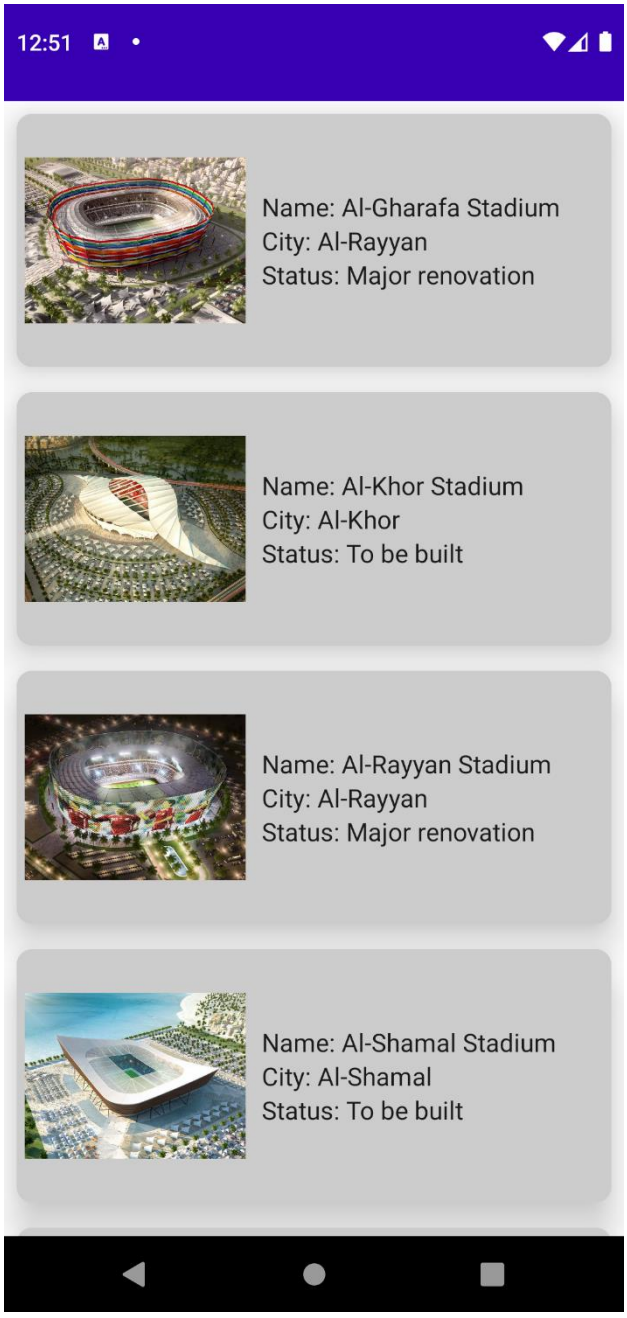


Figure 2. Stadiums App

1. Sync Lab GitHub repo to get the resources needed for this project.
2. Create a new project place it under **`Lab5-StadiumApp`** folder on your GitHub repo. Name the project "Qatar 2022 Stadiums". Use `cmps312.stadiumapp` as the package. Select *Empty Compose Activity* as the project template.

Note all Kotlin files related to the UI related should be added under `cmps312.stadiumapp.ui` package and the ones related to the app logic should be placed under `cmps312.stadiumapp.model` package.

3. Add the following dependency to the **module** build.gradle file.

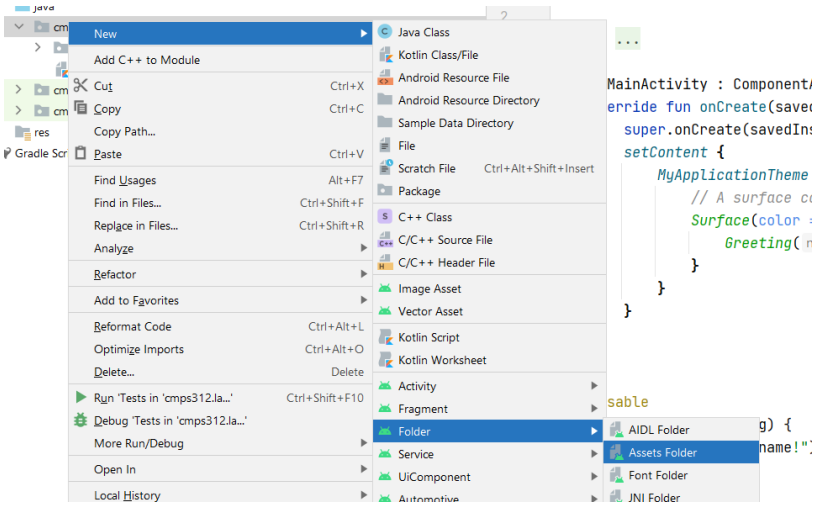
```
//For Kotlin Serialization
implementation 'org.jetbrains.kotlinx:kotlinx-serialization-json:1.2.2'
```

4. Also add the following plug-in:

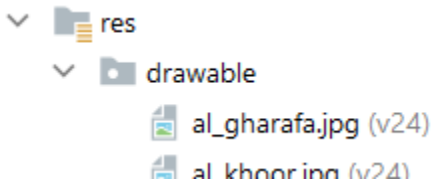
```
id 'org.jetbrains.kotlin.plugin.serialization' version '1.5.30'
```

```
plugins {
    id 'com.android.application'
    id 'kotlin-android'
    id 'org.jetbrains.kotlin.plugin.serialization' version '1.5.30'
}
```

5. Create an **assets** folder and add the ***stadium.json*** (available under Lab5 folder)



6. Copy all the stadium images from ***Lab5/images*** folder and paste them to **res>drawable** folder



7. Create a data class called **Stadium** (in a Kotlin file named Stadium). Derive Stadium properties from the JSON object shown below. Make sure you annotate the class with `@Serializable`.

```
{
  "name": "Al-Gharafa Stadium",
  "city": "Al-Rayyan",
  "status": "Major renovation",
  "imageName": "al_gharafa"
},
```

8. Add **`StadiumRepository`** object. Add **`getStadiums()`** function to read the **stadiums.json** file a list of stadiums. Note that stadiums retrieved from the json file should be cached in the `StadiumRepository` object to avoid repetitive reads.

1. Test your `StadiumRepository.getStadiums()` in the MainActivity and display all the stadiums on the Logcat using Log.d(…).
2. Create **`StadiumCard`** Kotlin file and build **`StadiumCard`** composable to display a stadium as shown in Figure 3.

   Tip: add appropriate modifiers and properties such as elevation, shape to achieve the desired design

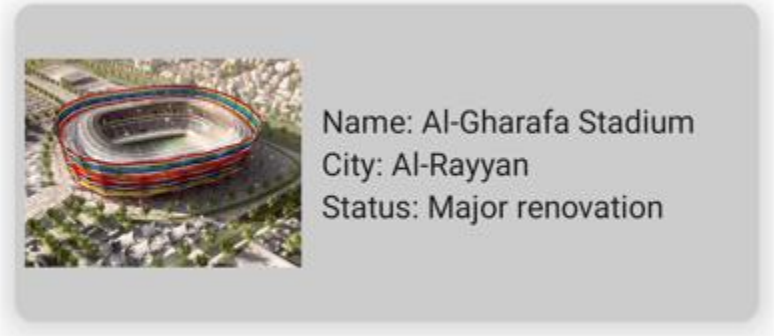


Figure 3. Stadium Card Composable

3. Add **`StadiumCardPreview`** composable to test the **`StadiumCard`** composable using Al-Gharafa Stadium details as shown in Figure 3.
4. Create **`StadiumScreen`** Kotlin file and build **`StadiumScreen`** composable to display the stadium returned by `StadiumRepository.getStadiums()` using a `LazyColumn`.
5. Add **`StadiumScreenPreview`** composable to test the **`StadiumScreen`** composable as shown in Figure 4.
6. Load the **`StadiumScreen`** in the MainActivity then test the whole app as shown in Figure 4.
7. Experiment with changing `LazyColumn` to `LazyRow` and retest your app.

Remember to test as you go and push your work to GitHub repository once completed.

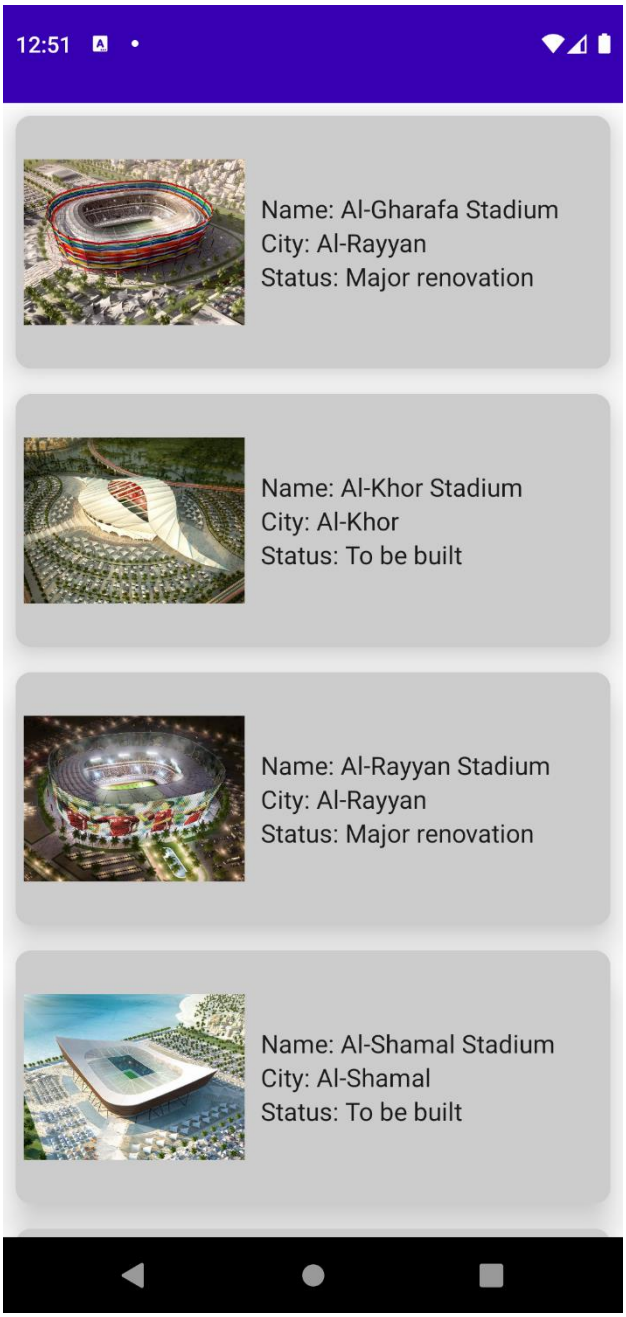


Figure 4. Stadiums List