

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 - Display Application

Create a new project place it under **Lab5-DispalyApp** folder on your GitHub repo. Name the project “Display”. Use `cmps312.display` as the package. Select *Empty Compose Activity* as the project template.

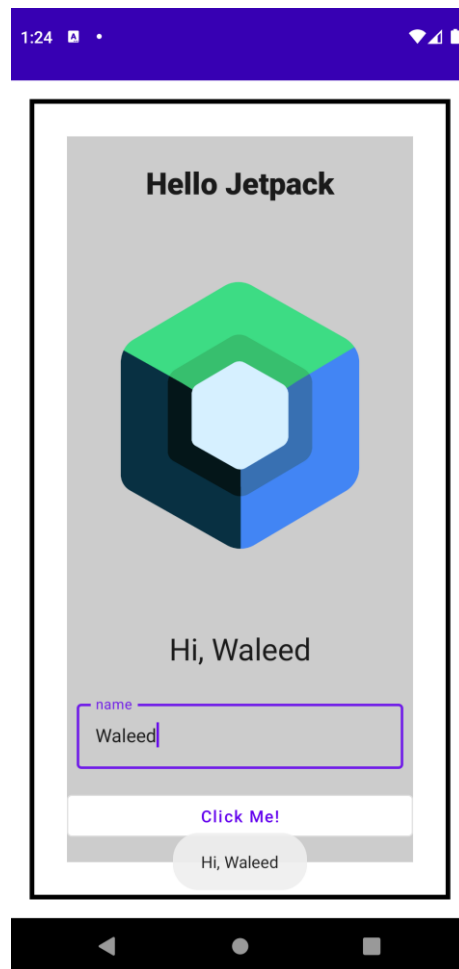


Figure 1 Display

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.

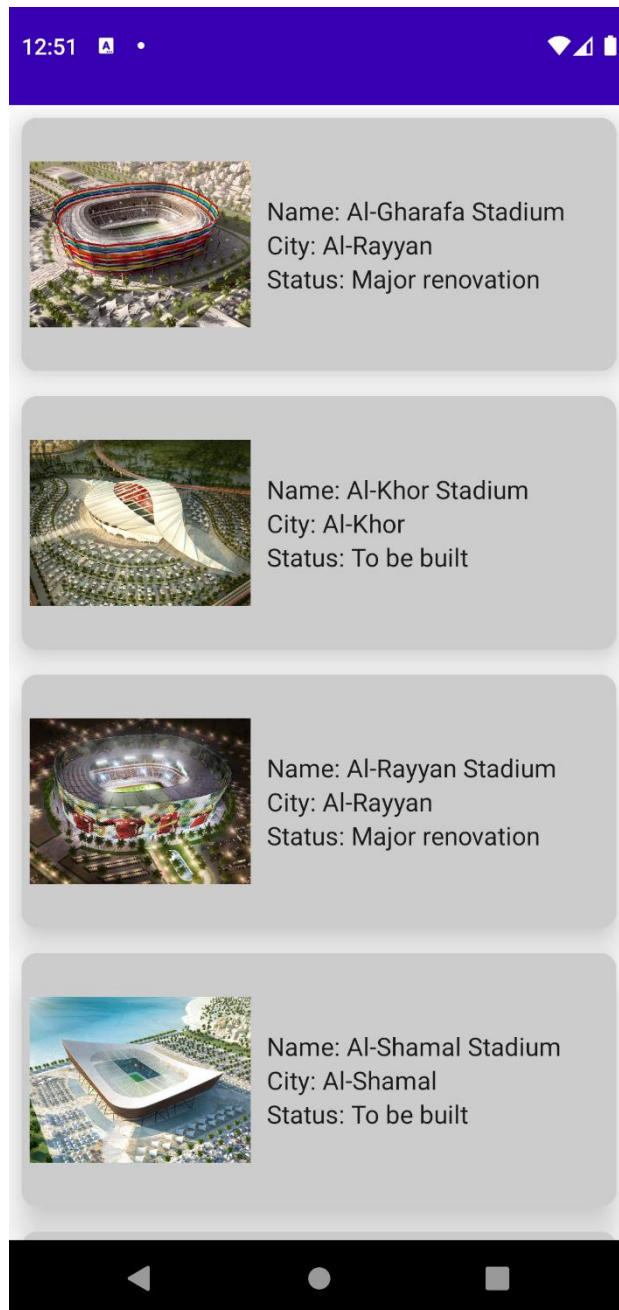


Figure 2. Stadiums App

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

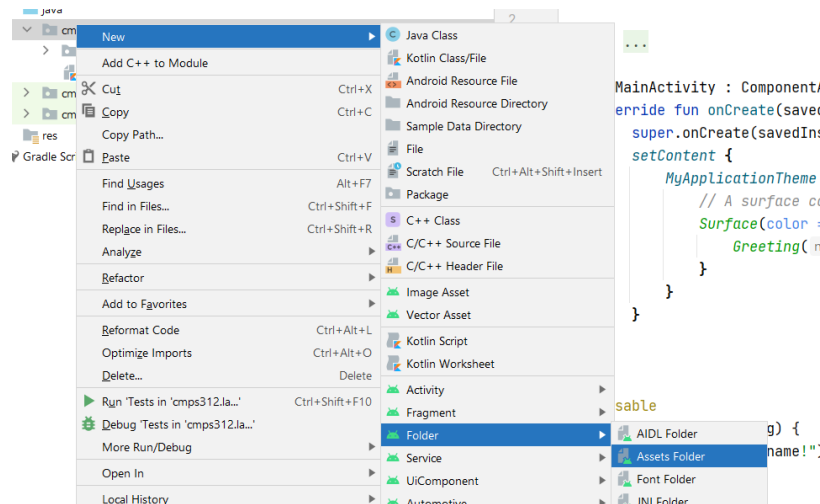
```
implementation 'org.jetbrains.kotlinx:kotlinx-serialization-json:1.2.2'
```

4. Also add the following plug-in:

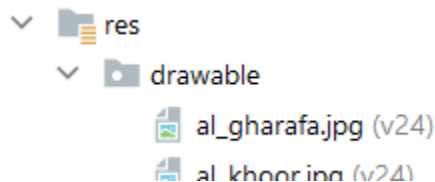
```
id 'org.jetbrains.kotlin.plugin.serialization' version '1.5.30'
```

```
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.
9. Test your **StadiumRepository.getStadiums()** in a main function and display all the stadiums on the console.
10. 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

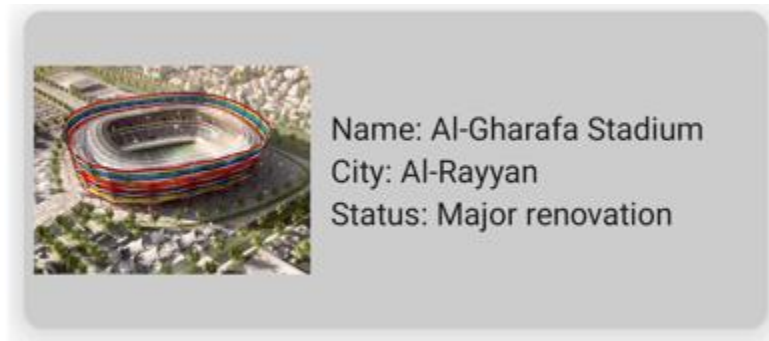


Figure 3. Stadium Card Composable

11. Add **StadiumCardPreview** composable to test the **StadiumCard** composable using Al-Gharafa Stadium details as shown in Figure 3.
12. Create **StadiumScreen** Kotlin file and build **StadiumScreen** composable to display the stadium returned by **StadiumRepository.getStadiums()** using a **LazyColumn**.
13. Add **StadiumScreenPreview** composable to test the **StadiumScreen** composable as shown in Figure 4.
14. Load the **StadiumScreen** in the **MainActivity** then test the whole app as shown in Figure 4.
15. 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.

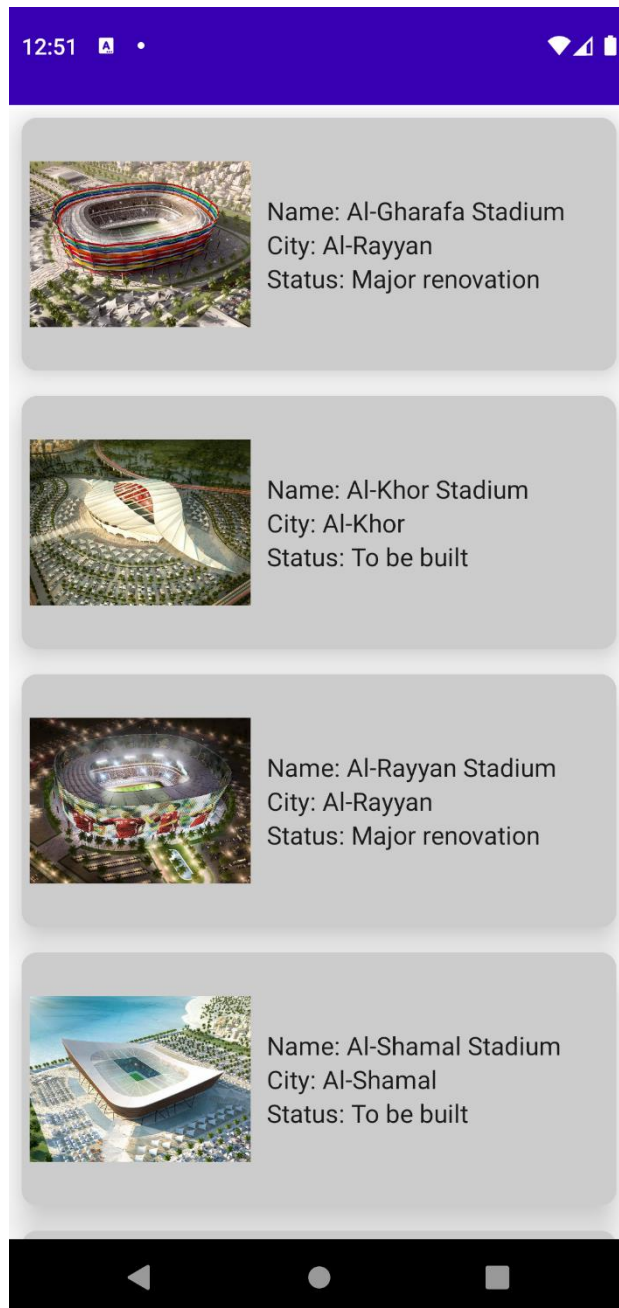


Figure 4. Stadiums List