LAB 04

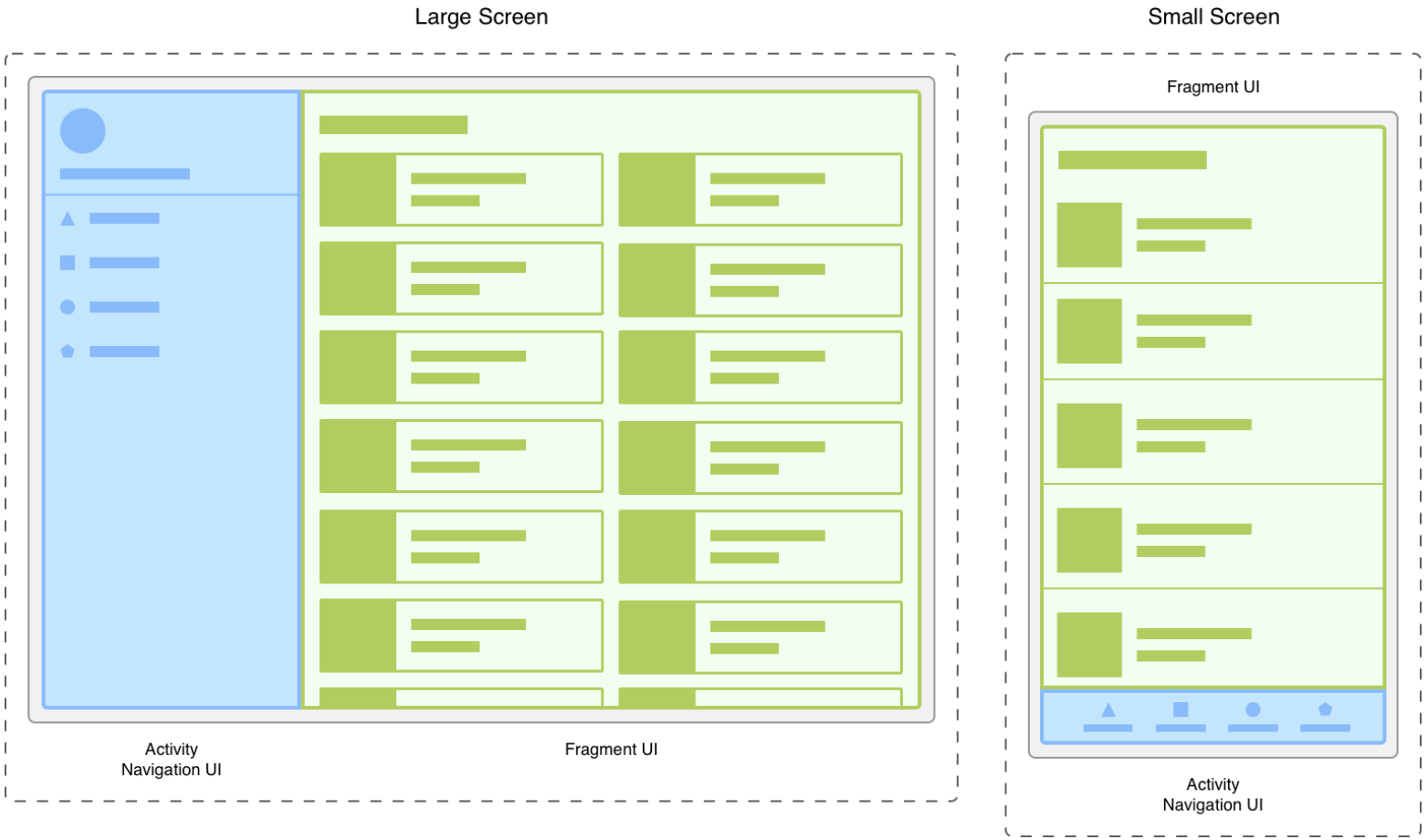
Firebase

plus everything from before

RECAP

Fragments and Nav

Fragments



https://developer.android.com/guide/fragments

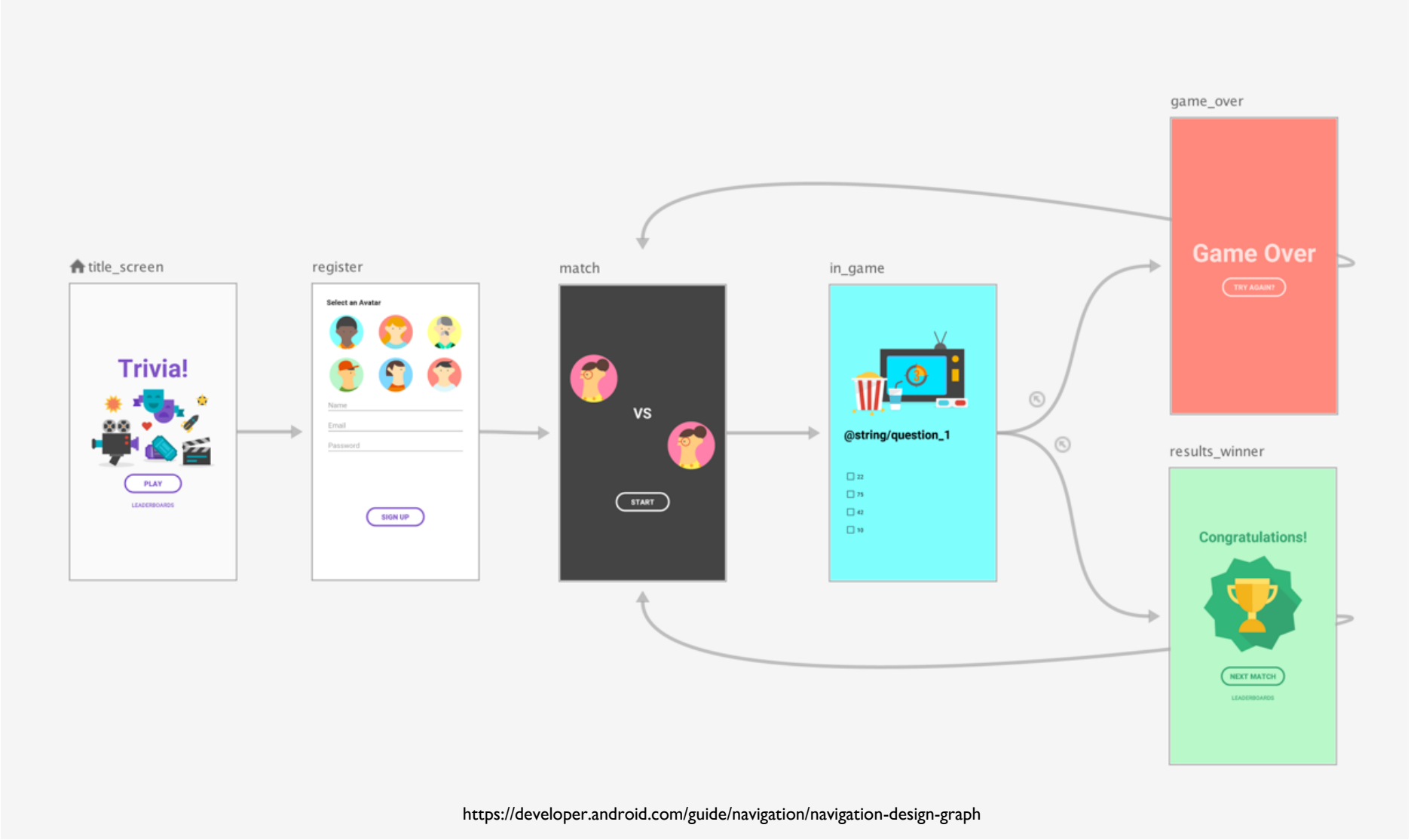
Navigation

- Three main components of navigation: destinations, actions, and navigation graphs.

- Navigation takes place between your app's **destinations**—that is, wherever in your app that users may travel to. These locations are linked together via **actions**.

- A **navigation graph** is a resource file that contains all of your destinations and actions. The graph represents all of your app's navigation paths.

Navigation Graph Example



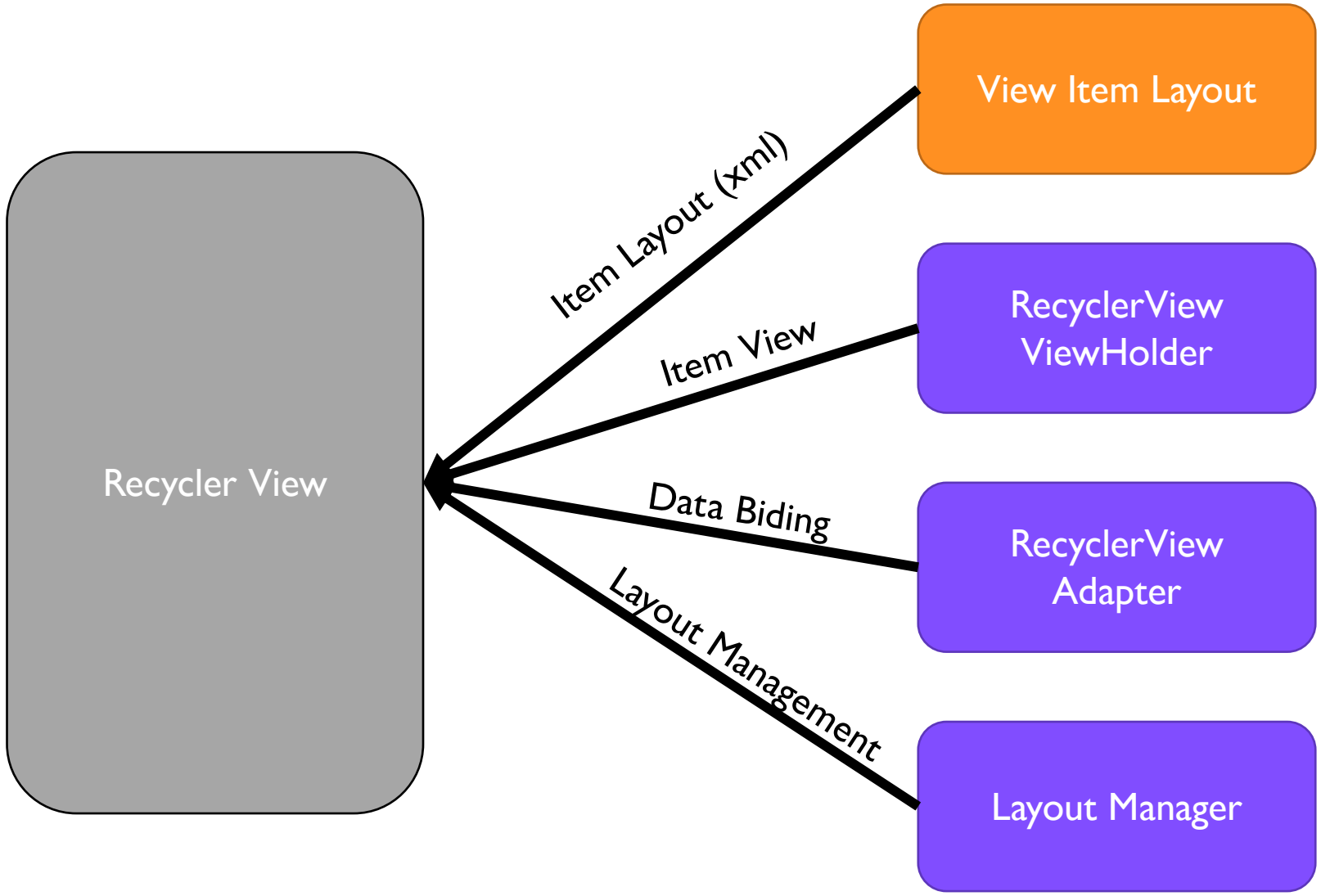
https://developer.android.com/guide/navigation/navigation-design-graph

RecyclerView

- “RecyclerView makes it easy to efficiently display large sets of data. You supply the data and define how each item looks, and the RecyclerView library dynamically creates the elements when they're needed."

  https://developer.android.com/develop/ui/views/layout/recyclerview

RecyclerView



RecyclerView

1. Define a model class for data
   - e.g., Contact.kt
2. Create the Layout for each Item
   - Use FrameLayout
3. Create your ViewHolder class (connects data to the layout)
4. Created your Adapter to bind the RecyclerView to your data storage
   - Firebase, MySQL, Room, an ArrayList
5. Profit!

The ViewHolder and Adapter classes

- ViewHolder
  - Inherits from `RecyclerView.ViewHolder`

- Adapter
  - Inherits from `RecyclerView.Adapter<T>`
  - Where T is your ViewHolder class

WHAT'S TODAY?

Firebase

- Storage
- Authentication
- Cloud Functions
- Machine Learning
- Testing
- Release Management
- … and more

Lab Assignment 04 (not graded)

- This assignment target's Android.
  - Kotlin only!
  - You will have to use the emulator or your phone

- Starter Code?
  - Download A3's solution (or use your own)
    https://git.cs.dal.ca/courses/2022-fall/csci4176_5708/assignment-3/solution

Lab Assignment 04 (not graded)

- Useful Resources
  - https://developer.android.com/guide/navigation
  - https://developer.android.com/guide/fragments
  - https://developer.android.com/develop/ui/views/layout/recyclerview
  - https://firebase.google.com/docs/android/setup
  - https://firebase.google.com/codelabs/firestore-android?hl=en#6

Setting up Firebase

- Go to the Firebase console and create a project
  - Spark accounts are free
- Download the google-services.json configuration file
  - Add to the **root** of your project
- Create a Firestore database

Setting up Firebase

- On Android Studio, set up the dependencies

```
build.gradle (project-level)

    Add rules to include the Google Services Gradle plugin:
        classpath 'com.google.gms:google-services:4.3.3'

-------------------------------------------------------------

app/build.gradle

    Apply the Google Services Gradle plugin:
        apply plugin: 'com.google.gms.google-services'

    Add the library dependency:
        implementation platform('com.google.firebase:firebase-bom:31.0.2')
        implementation 'com.google.firebase:firebase-firestore-ktx'
```

Lab Assignment 04

- Two Fragments
- Modify the application created in A3 to store and retrieve notes from Firestore instead of a local persistence option

- Modify the add note fragment to store on Firestore
- Change the recycler view adapter to fetch from Firestore
  - You do this by creating a query and listening to changes

WE ARE HERE TO HELP