LAB 02

Android Studio

Activity

Fragments

Navigation

# Android Studio

- The "easiest" way to develop for Android

- Download at: https://developer.android.com/studio

- Requirements fall within CS's recommended hardware
  - https://www.dal.ca/faculty/computerscience/current/technical-services/laptop-recommendations.html

Activities in Android

- Activity in Android is a single screen. Almost all activities interact with the user, therefore the Activity class creates a window for you to set your user interface in.

- In the past, each activity used to contain various widget and components that user would interact with.

- Now, each activity is made up of one or more Fragments.

The Activity Lifecycle

- Android controls the state of the Activity for you

- User actions will trigger activity transitions

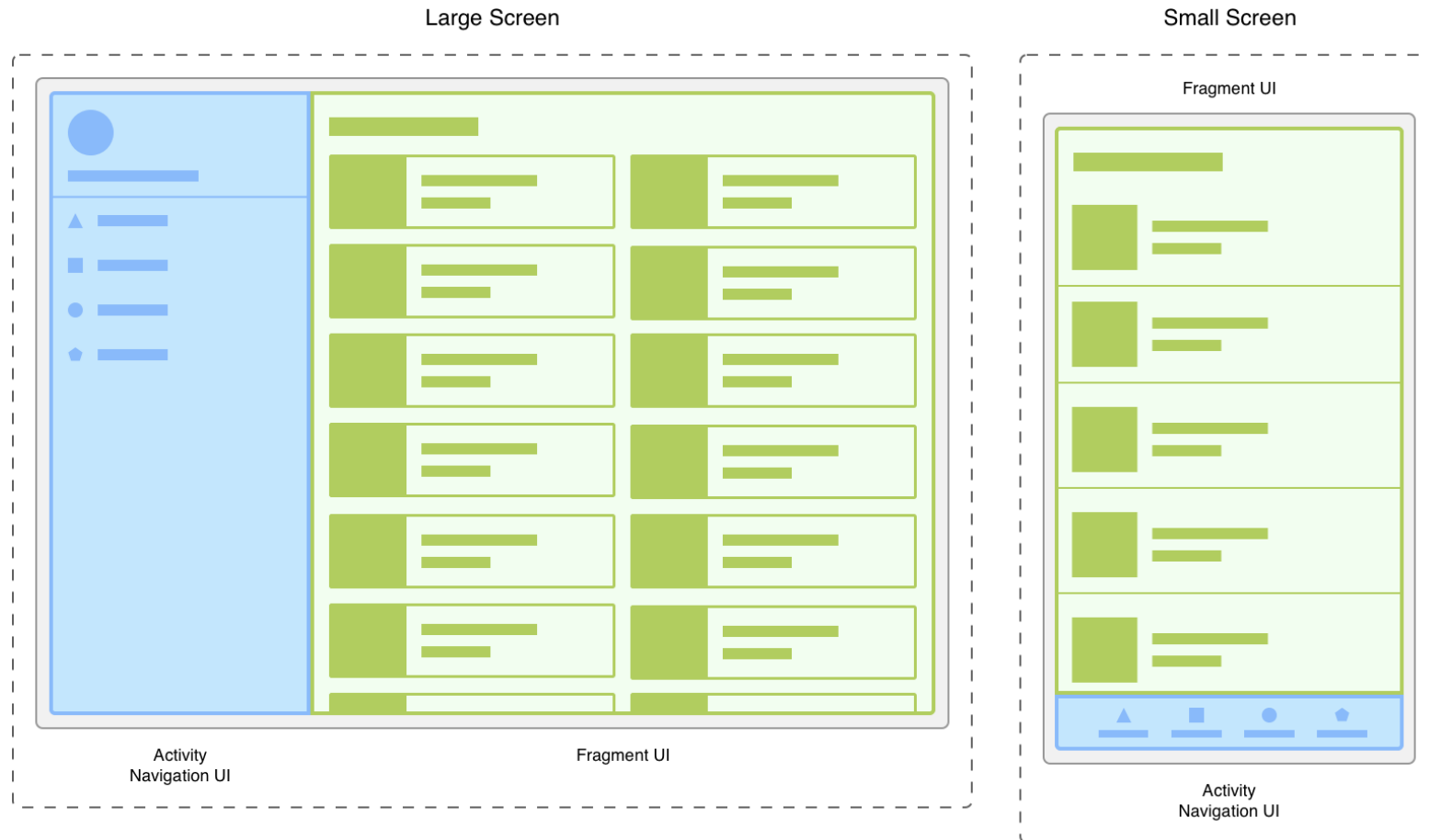- You can override the methods to take specific actions on transitions.
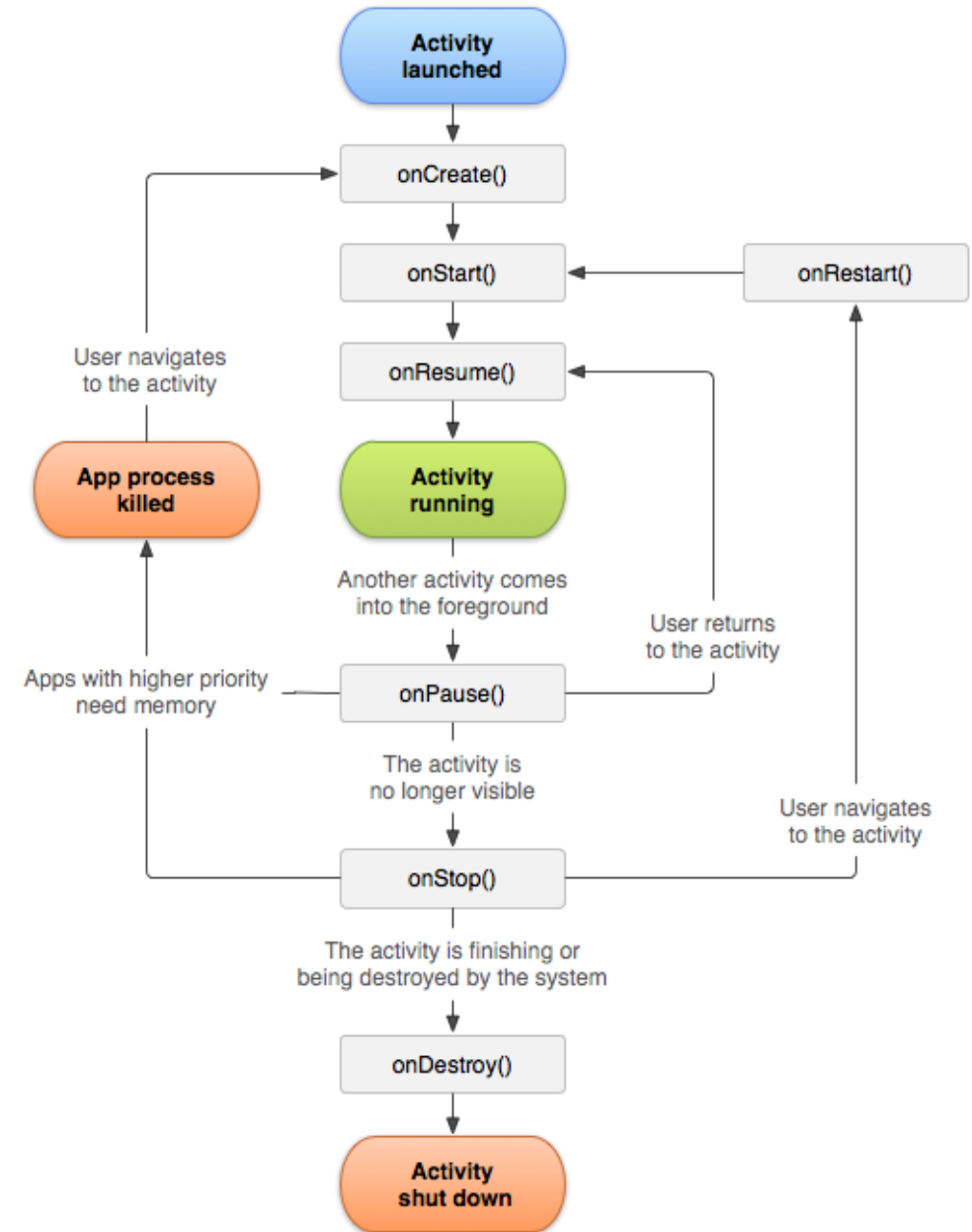
PREFER THE SINGLE ACTIVITY PATTERN

It is "just" a suggestion ☺

Fragments

- A Fragment is a reusable part of your app's user interface.

- Fragments cannot exist alone; they must be hosted by an activity or fragment.

- Fragments provide modularity and reusability to your activity's UI by dividing the UI into separate sections.

- A fragment has its own layout and lifetime, as well as the ability to handle its own input events.
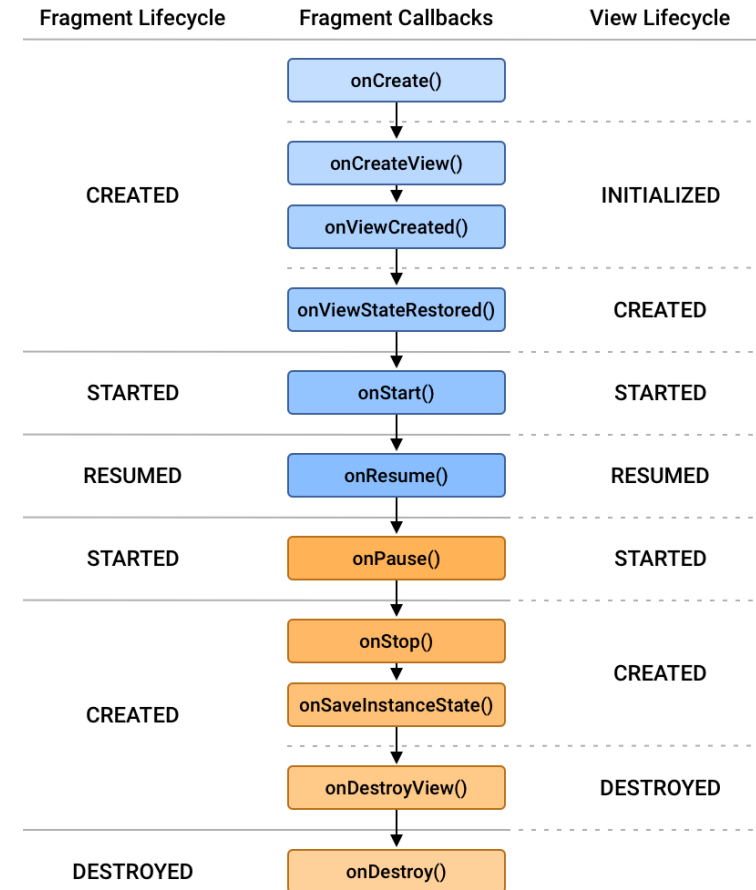
Fragments

Large Screen

Small Screen

Activity
Navigation UI

Fragment UI

Fragment UI

Activity
Navigation UI

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

Fragments

- Fragments also have well defined lifecycles

- Recommended read: https://developer.android.com/guide/fragments

Fragment Lifecycle	Fragment Callbacks	View Lifecycle
CREATED	onCreate()	
	onCreateView()	INITIALIZED
	onViewCreated()	
	onViewStateRestored()	CREATED
STARTED	onStart()	STARTED
RESUMED	onResume()	RESUMED
STARTED	onPause()	STARTED
CREATED	onStop()	CREATED
	onSaveInstanceState()	
	onDestroyView()	DESTROYED
DESTROYED	onDestroy()	

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

NAVIGATION

You should leverage the Navigation Component in your project

Remember the "just" a suggestion from before?

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
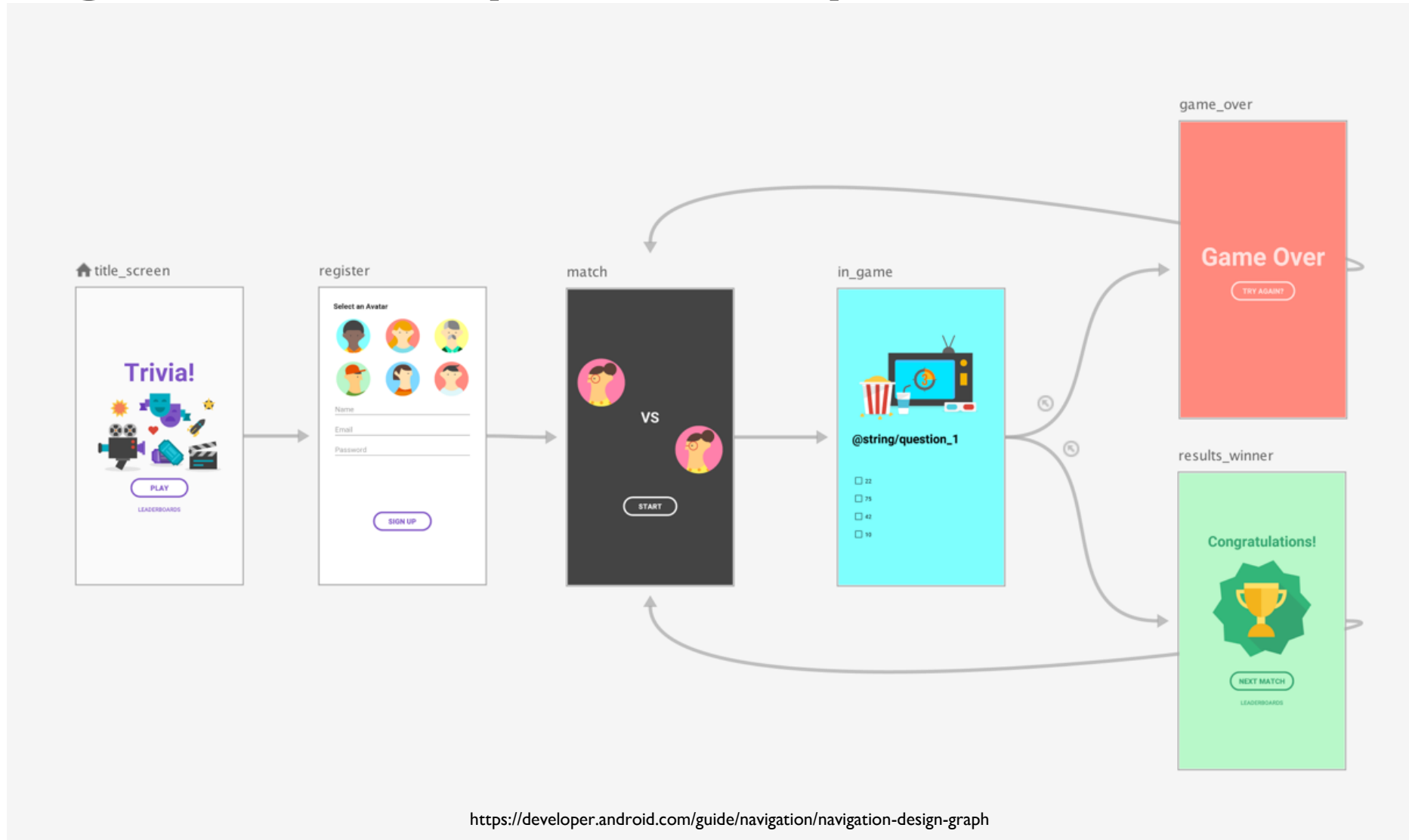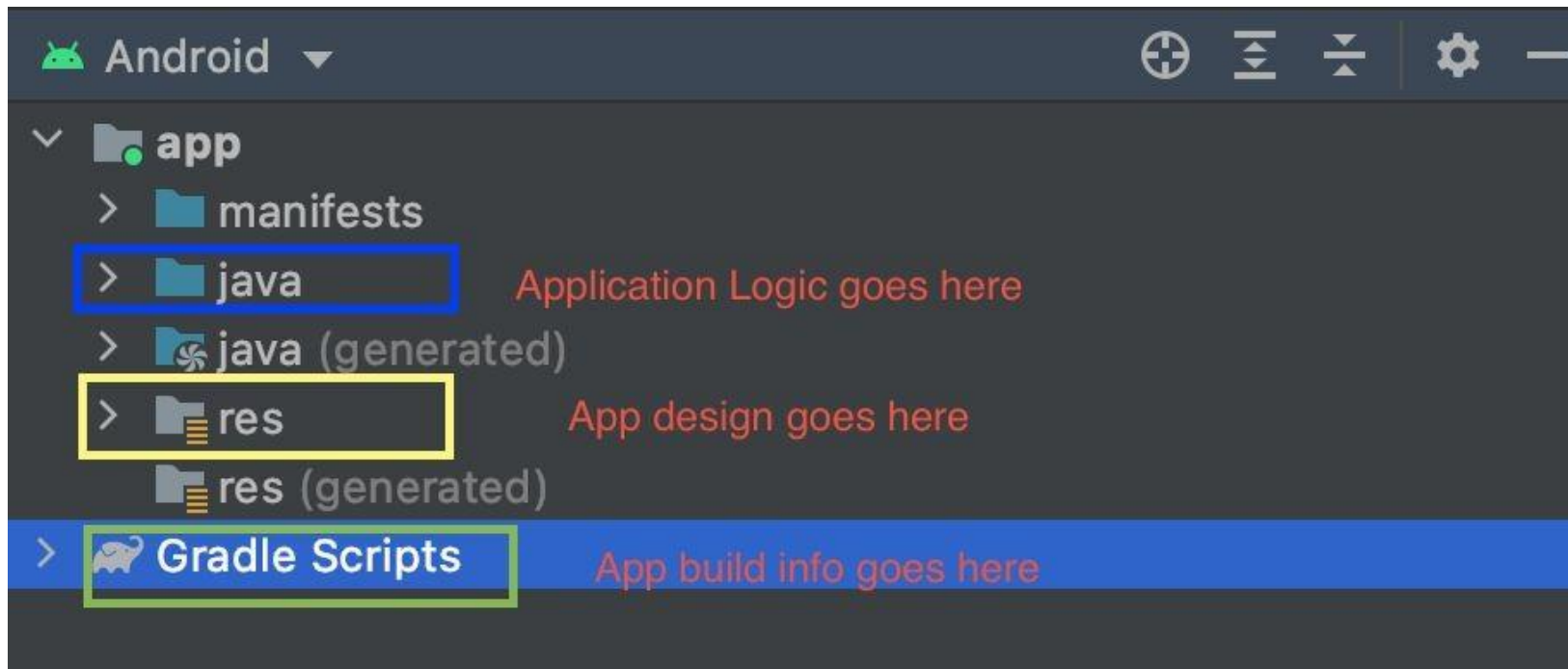
Lab Assignment 02

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

- Starter Code?
  - In your GitLab repo
    - Clone it to start ;)
  - It's the "Empty Activity" Template
    - Why not another one with some Fragments starter code?
      - Because I want you to start form scratch and understand the process.

Lab Assignment 02

- Useful Resources
  - https://developer.android.com/guide/navigation
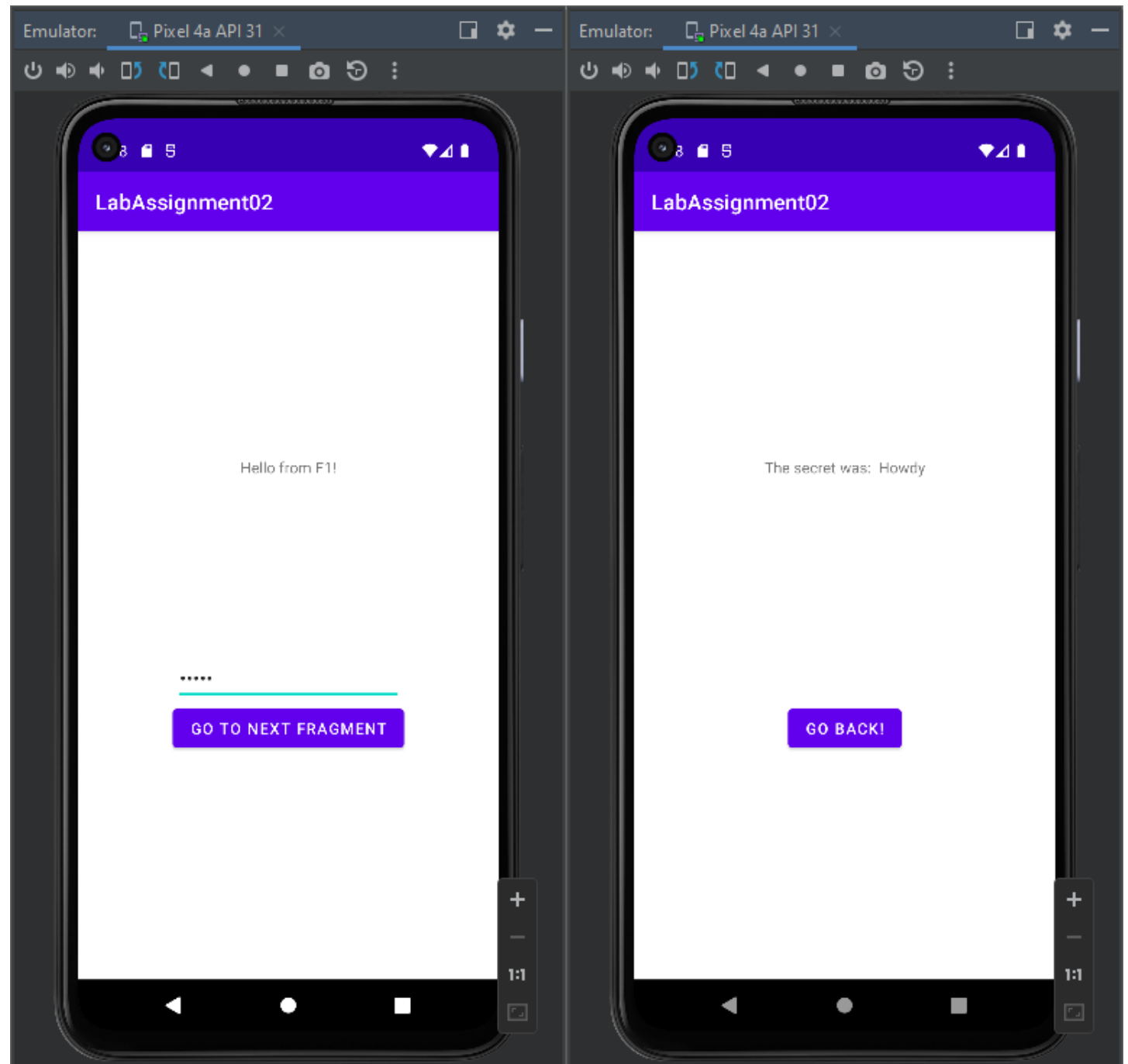 - https://developer.android.com/guide/fragments

Lab Assignment 02

- Create a placeholder activity
- Add Two Fragments
- Add Navigation
- **Pass Data**
  - There is more than one way of doing this (at least 3)
  - Explore them a bit, you'll have to do this in your project
  - Now is the change to toy with the concepts

Lab Assignment 02

WE ARE HERE TO HELP

With Kotlin, Git Flow, GitLab, Other Topics