



Waterford Institute *of* Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

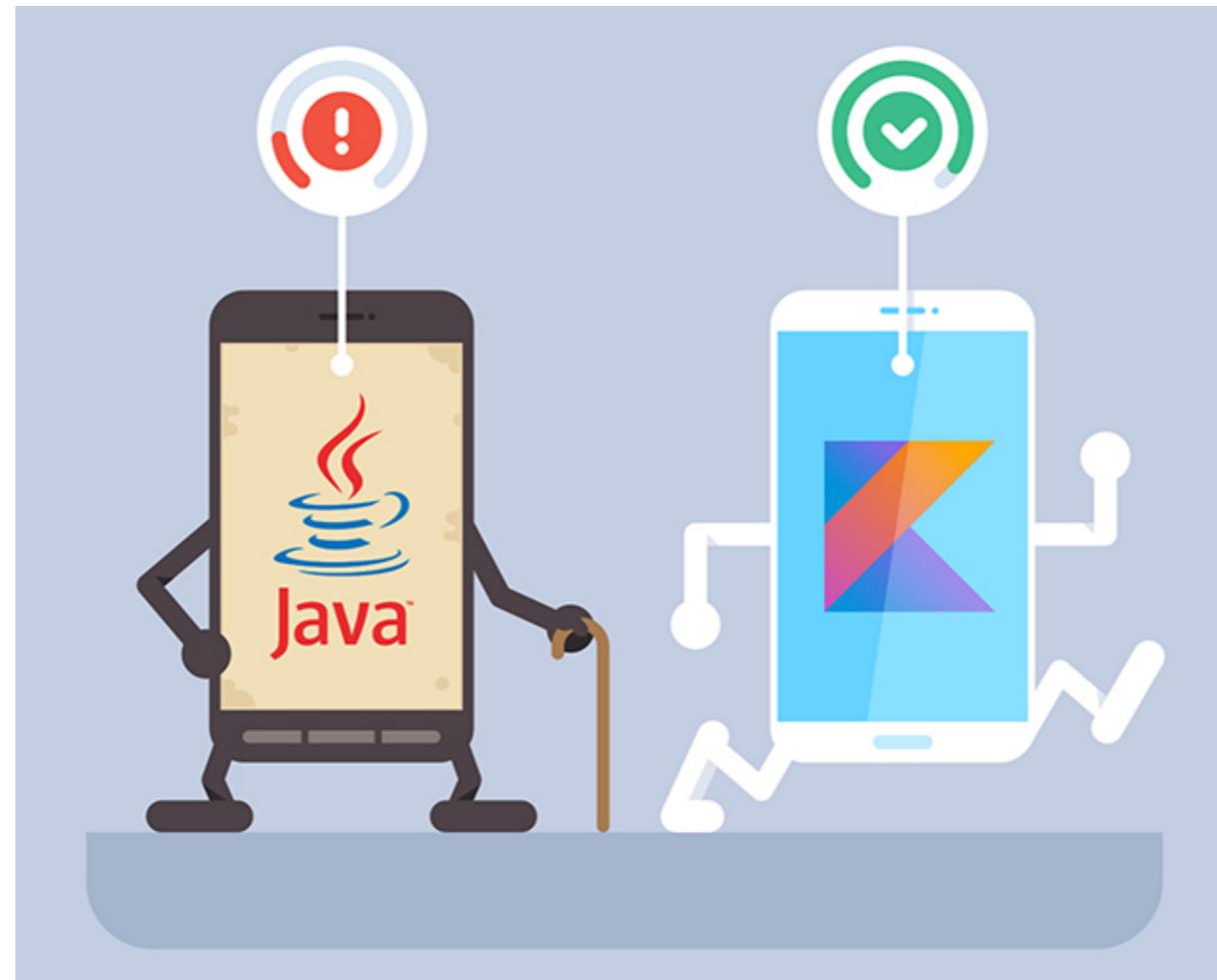


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2018

Android Programming with Kotlin

Course Mission: *Accelerate into Android App development leveraging the power & expressiveness of Kotlin*



Introducing Kotlin

- Talk Title
- Programming Language
- Convergence
- Kotlin: Background
- Kotlin: Characteristics
- J2K Cheatsheet: Variables
- J2K Cheatsheet: Control Structures

Android Foundations

- Kotlin: Data classes & Lambdas
- Kotlin: Types
- Android: Foundation
- Android: Application Object
- Lab-01

Adapters & Models

- Recycler View + Adapters
- Memory Store
- Kotlin Variables & Functions
- Lab-02

Listeners & Parcelable

- Adapter + Listener
- Parcelable
- Kotlin Control Flow
- Lab-03

Images & Architecture

- Lab 03 Exercise Solutions
- Images
- Architecture
- Lab-04

GoogleMap Activity

- Map Setup
- Map Models

Android Programming with Kotlin

Eamonn de Leastar, WIT for OTH Regensburg



Android Foundations



Kotlin Data classes + Lambdas.
Android Project Structure.
Layouts & Resources. Activities
and Application classes

Adapters & Models



Recycler view and adapters.
Role of Models in an Android
Application. Kotlin Functions.

Listeners & Parcelable

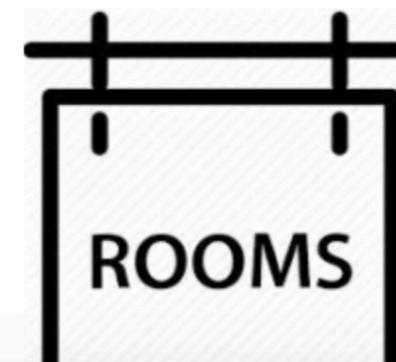


The role of adapters &
listeners. The Parcelable type
in Kotlin. The cards widgit.
Kotlin control flow

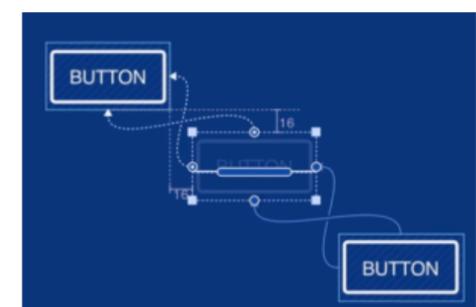
GoogleMap Activity



Database Rooms



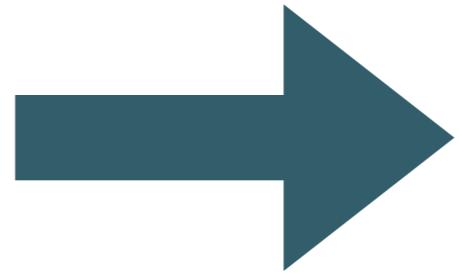
Map & Landscape



“Building Android applications is both exciting and challenging. The diversity of the applications one can build is fascinating, however their complexity can be overwhelming. Kotlin, a new language fully supported by google, dramatically enhances the power and simplicity of the programmers task.”



Kotlin is:



Modern

Secure

Typesafe

Expressive

Concise

Introducing Kotlin



Android Foundations



Place Kotlin in the context of modern programming Languages. Explore the characteristics of the language and its fundamental constructs.

Adapters & Models



Recycler view and adapters. Role of Models in an Android Application. Kotlin Functions.

Listeners & Parcelable



The role of adapters & listeners. The Parcelable type in Kotlin. The cards widgit. Kotlin control flow

Images & Architecture



ImageViewer and ImagePicker. Managing images using the Storage Access Framework. Application Architecture

GoogleMap Activity



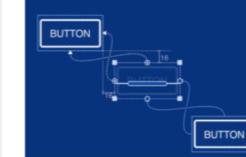
Introducing Maps into an application. Keys & Permissions. Camera, location and options. Introducing Markers.

Database Rooms



Android Architecture Components. The Room framework. Creating and updating a simple database.

Map & Landscape



Managing embedded maps. Initialisation and manipulation. Managing a landscape perspective.

Markers & Location



Configure Markers and listen for marker events

Location Tracking



Track locations in real time. Update UI in this context. Rationalise approach to managing component versions.

Course Structure

Firebase Authentication



Introducing Firebase Authentication, Database and Storage services. Utilising the Authentication service

Firebase Database



Replacing Rooms with Firebase Database services. Moving images from the Storage Access Framework to Firebase Storage

Introducing Kotlin



Place Kotlin in the context of modern programming Languages. Explore the characteristics of the language and its fundamentals constructs.

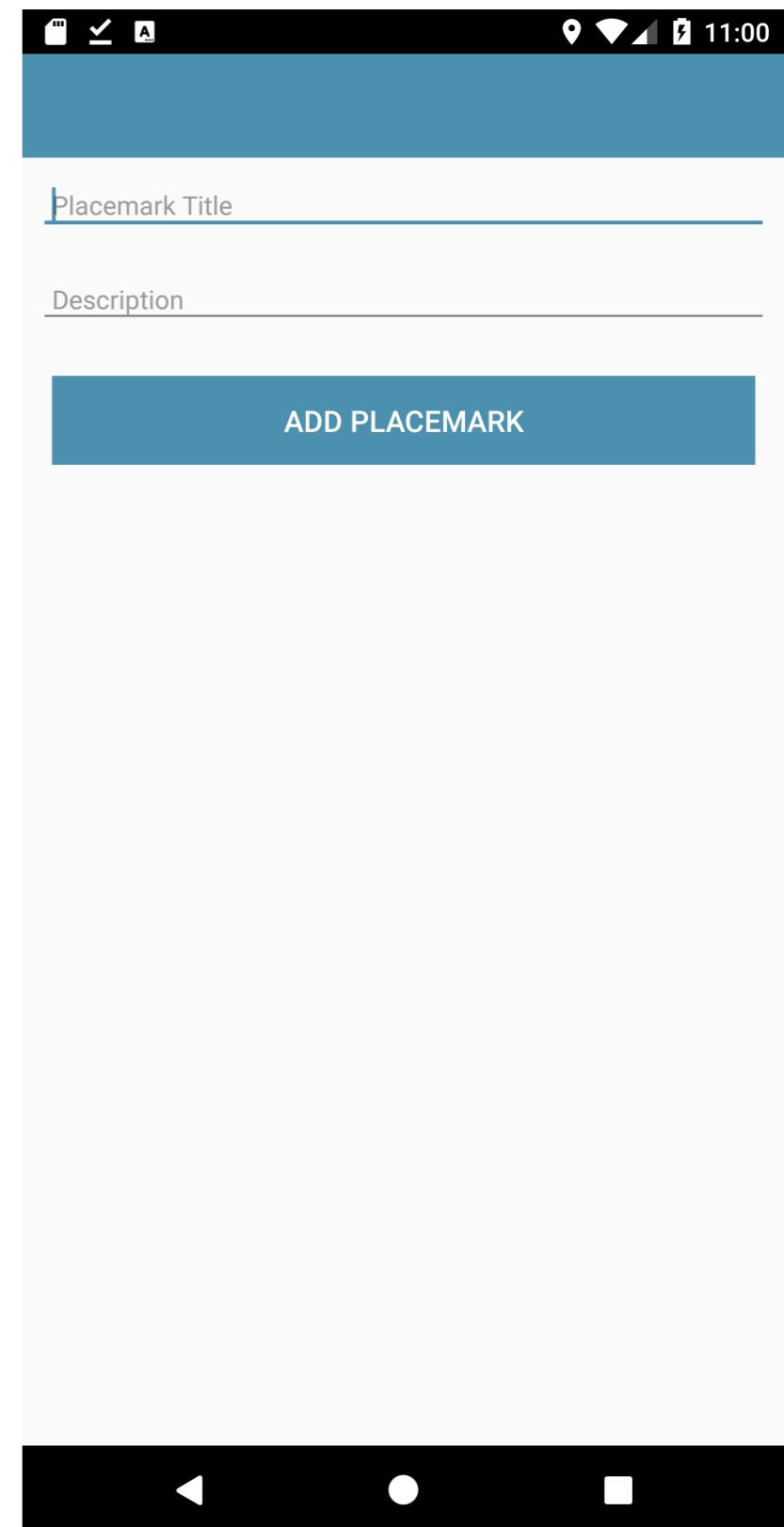
Assumptions:
Intermediate level Java or closely related language skills

Accelerate into the fundamentals of Kotlin we need

Placemark



Single Activity Android Application



Accepts:

- Placemark Name
- Placemark Description

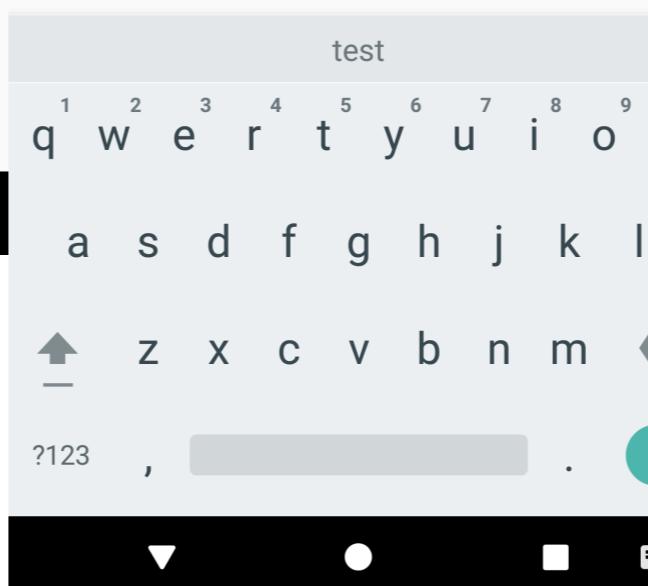


Add placemark
List all added placemark

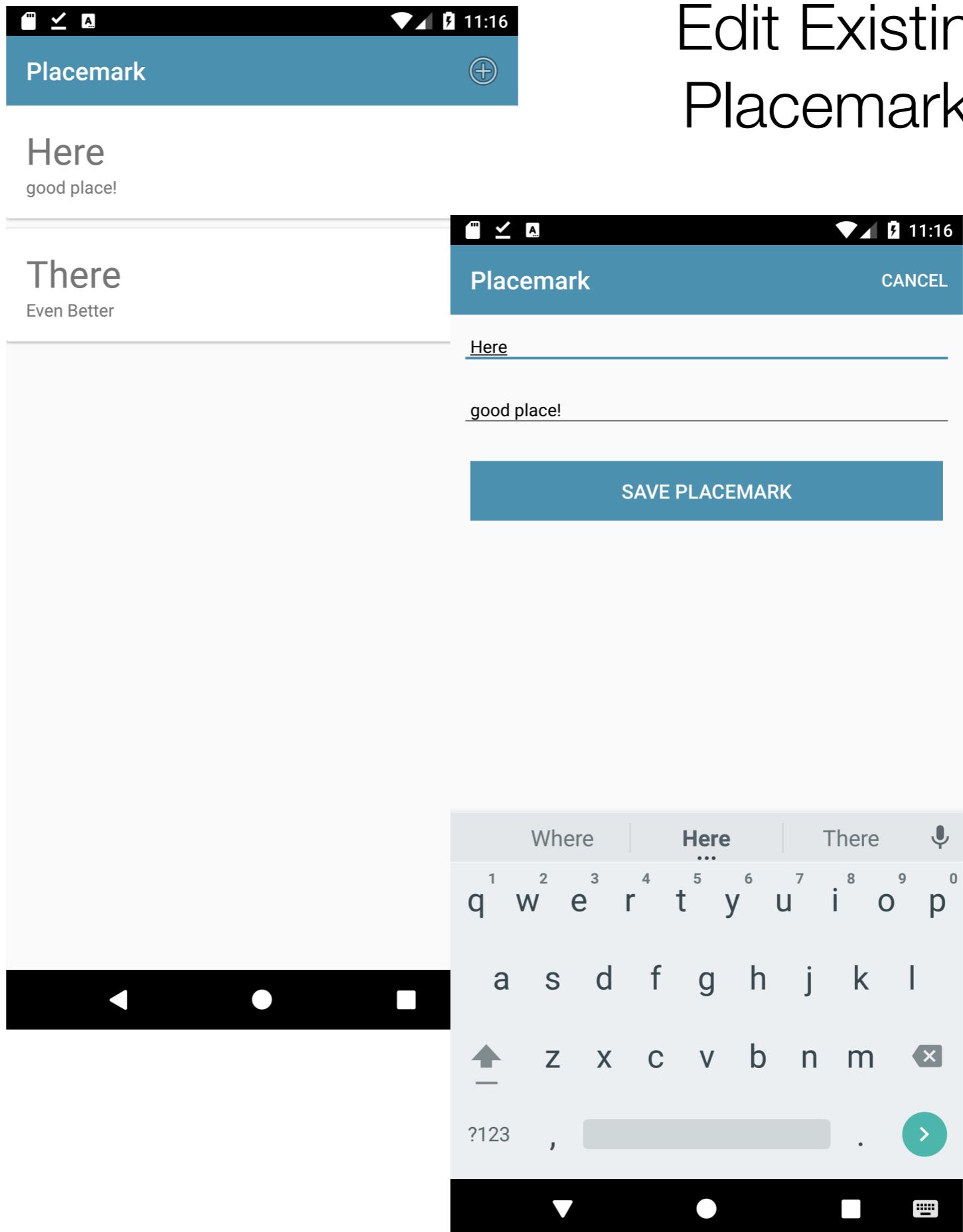
Adapters & Models



Recycler view and adapters.
Role of Models in an
Android Application. Kotlin
Functions.



Edit Existing Placemarks



Include Images in Placemarks

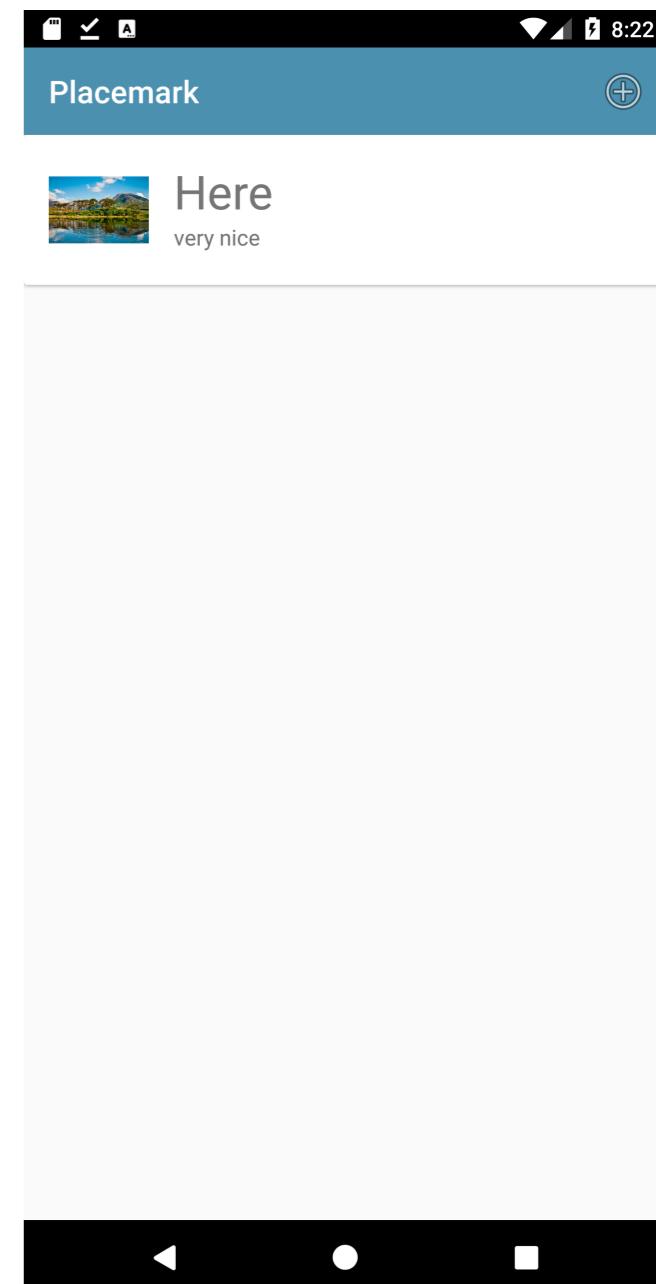
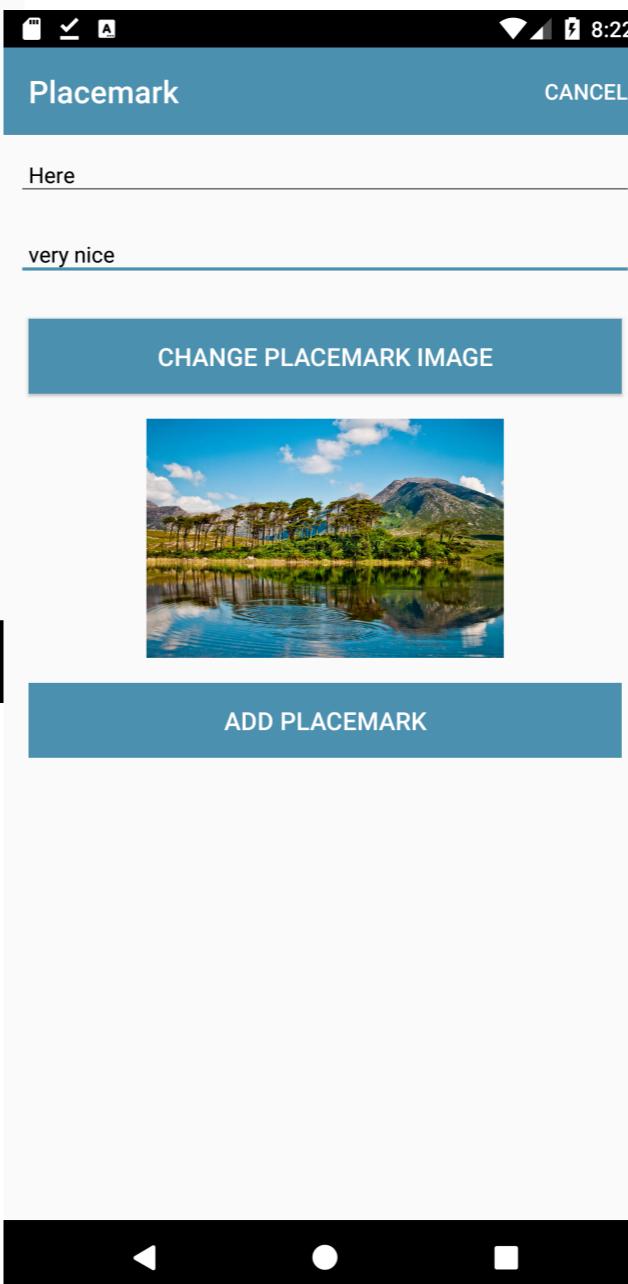
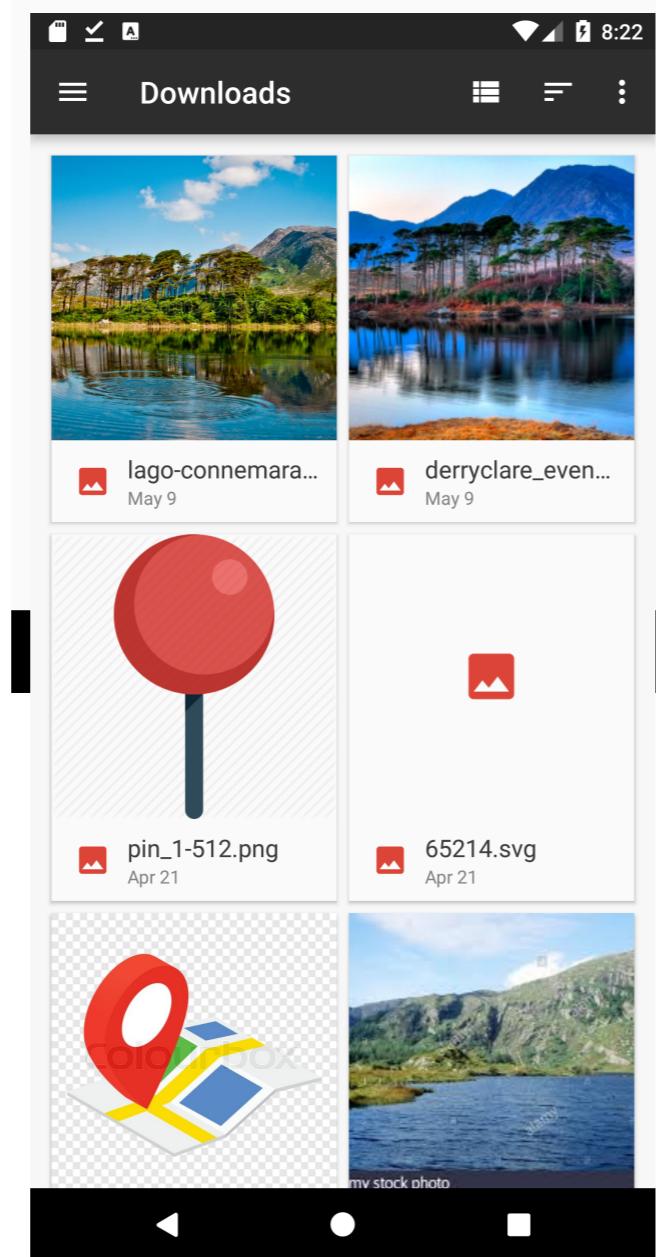
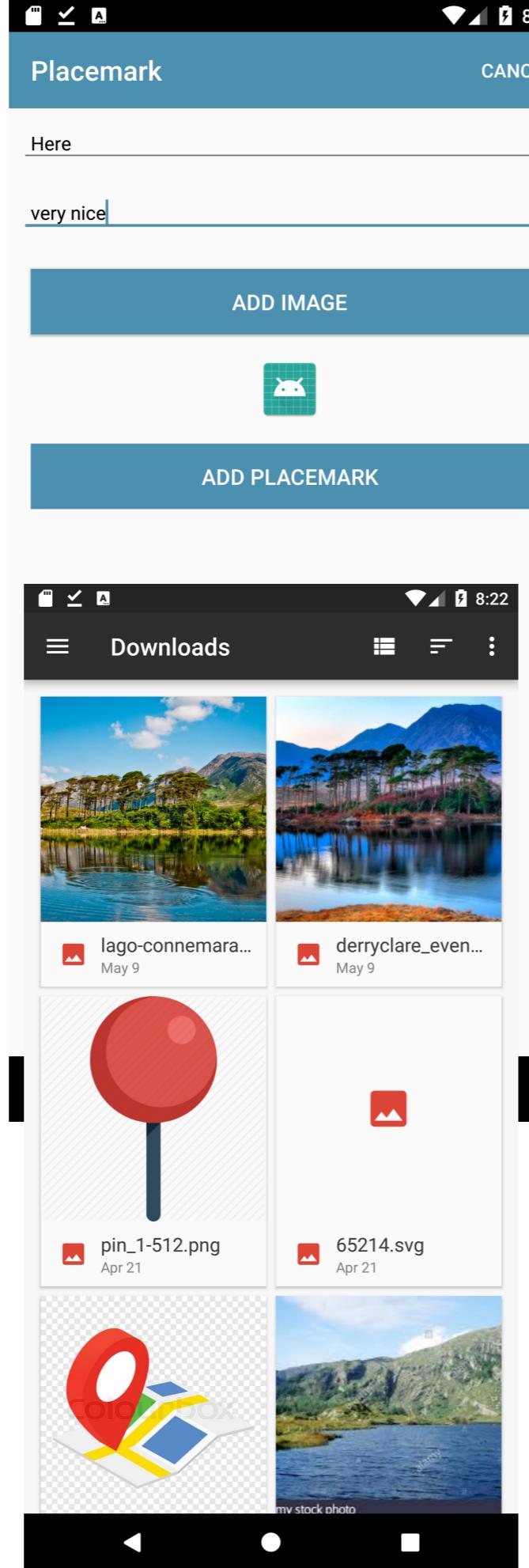
Images & Architecture



CHANGE PLACEMARK IMAGE



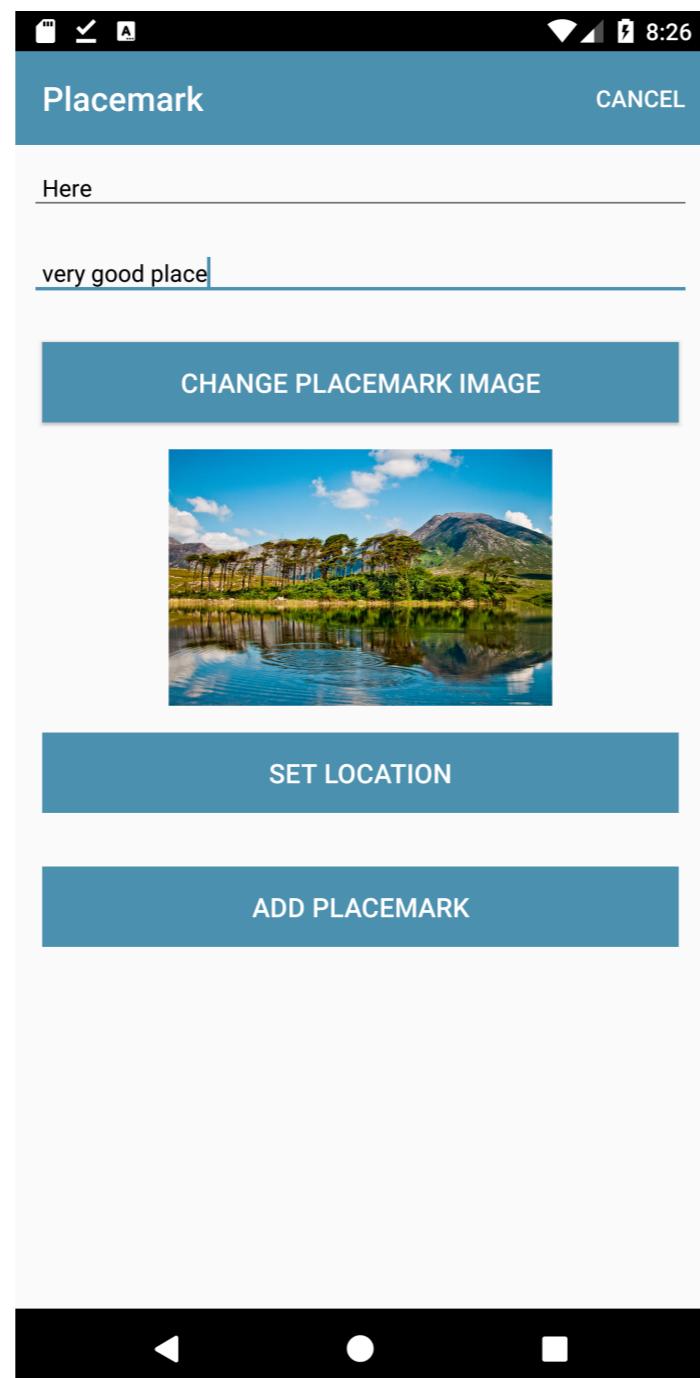
ImageViewer and
ImagePicker. Managing
images using the Storage
Access Framework.
Application Architecture



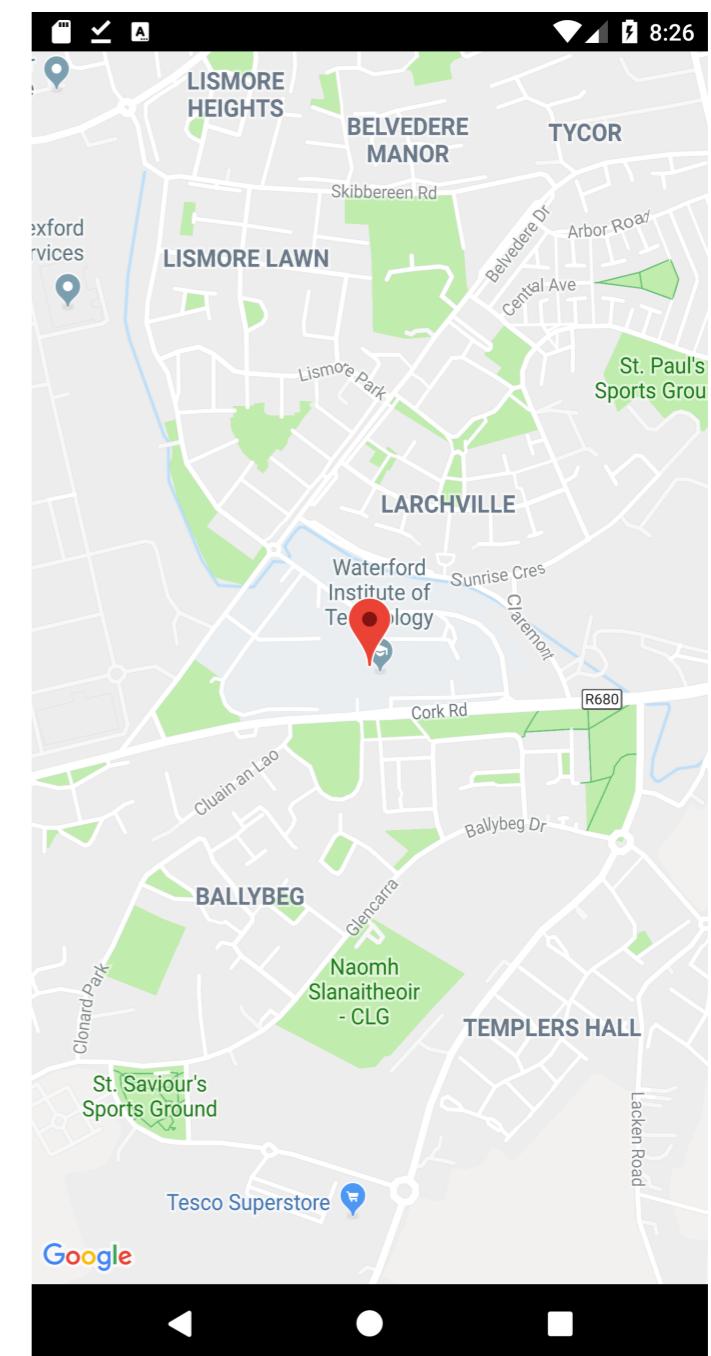
GoogleMap Activity



Introducing Maps into an application. Keys & Permissions. Camera, location and options.
Introducing Markers.

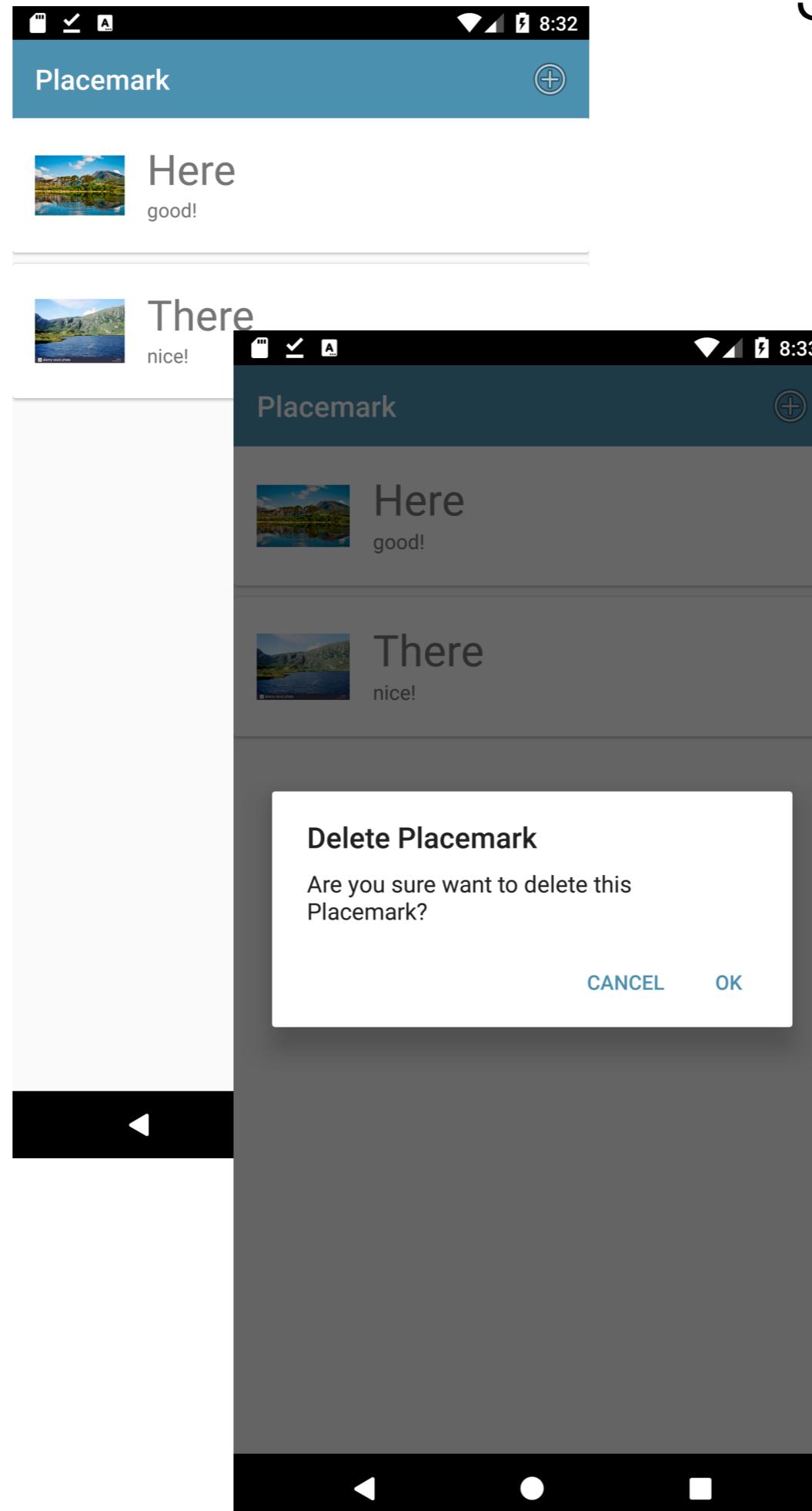
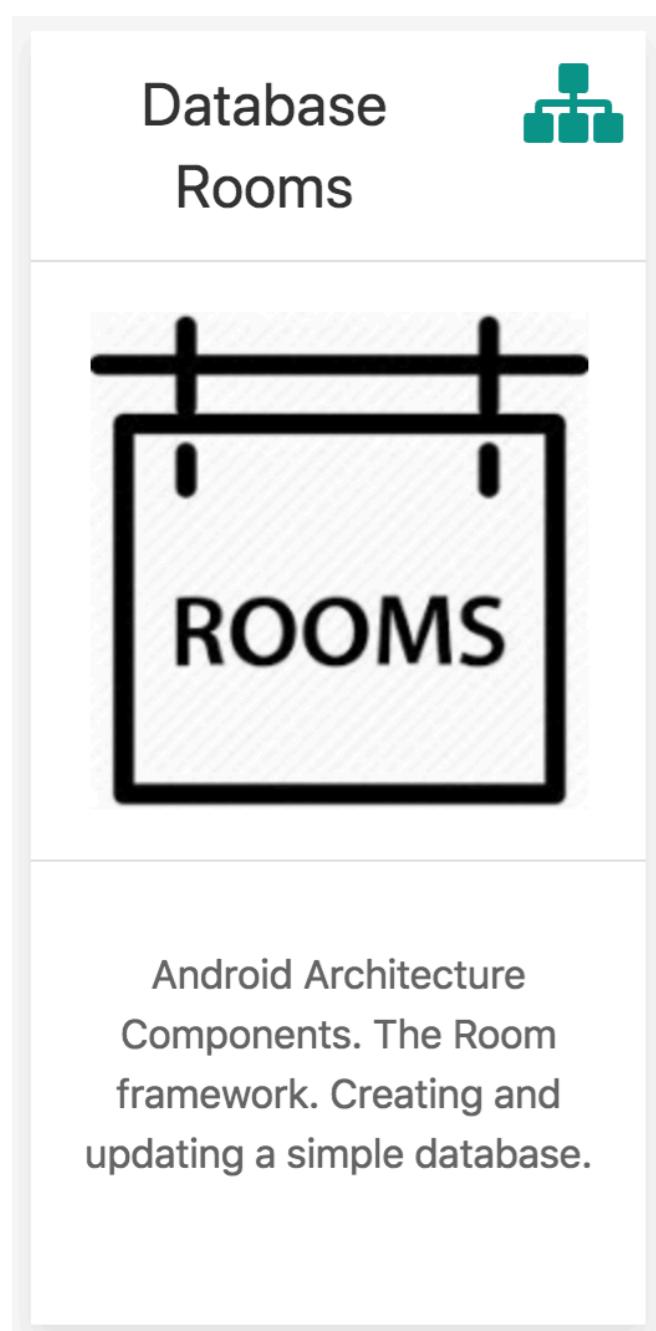


Choose a Location for the Placemark



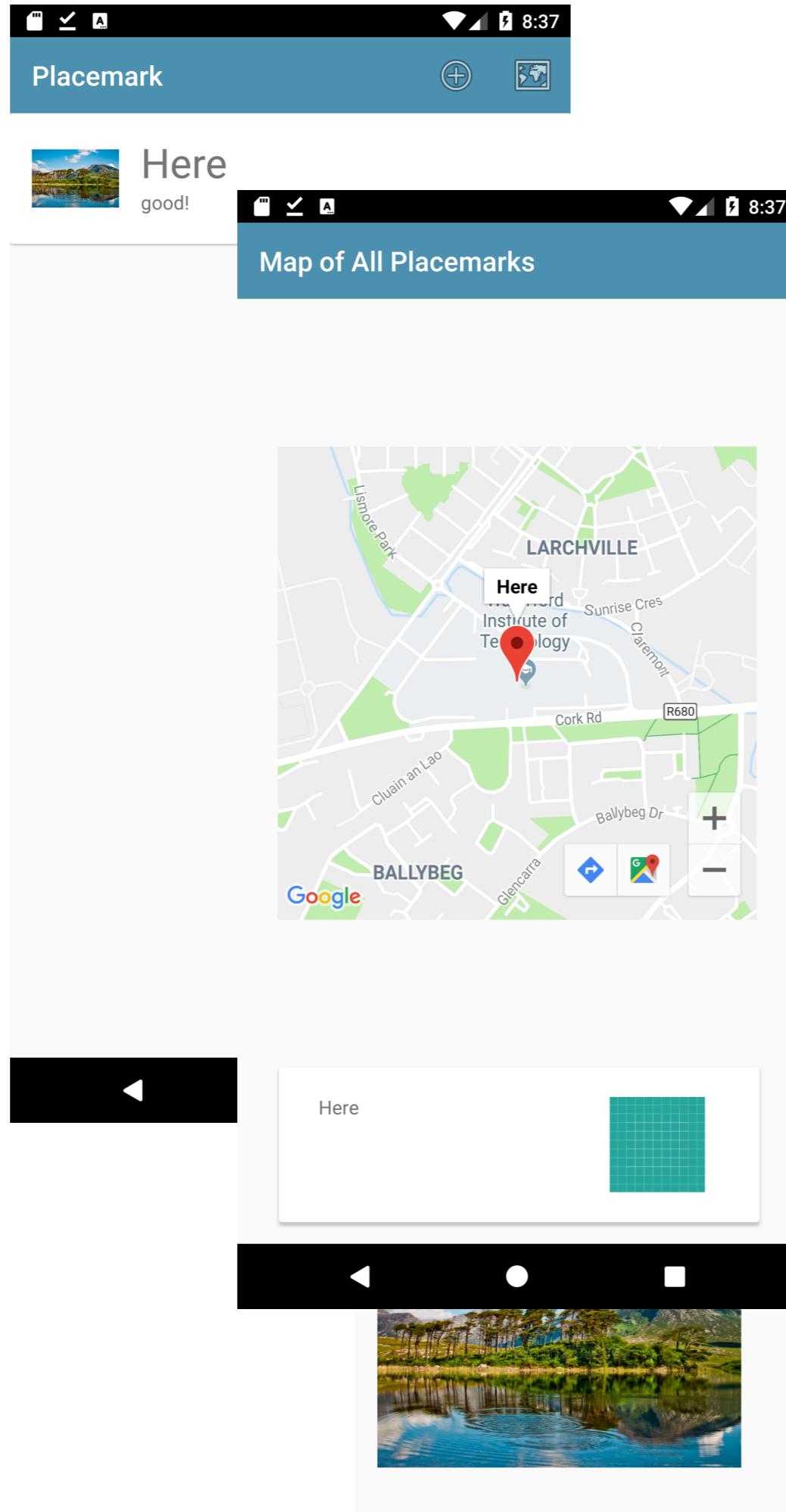
Store Placemark in Database

Delete Placemarks



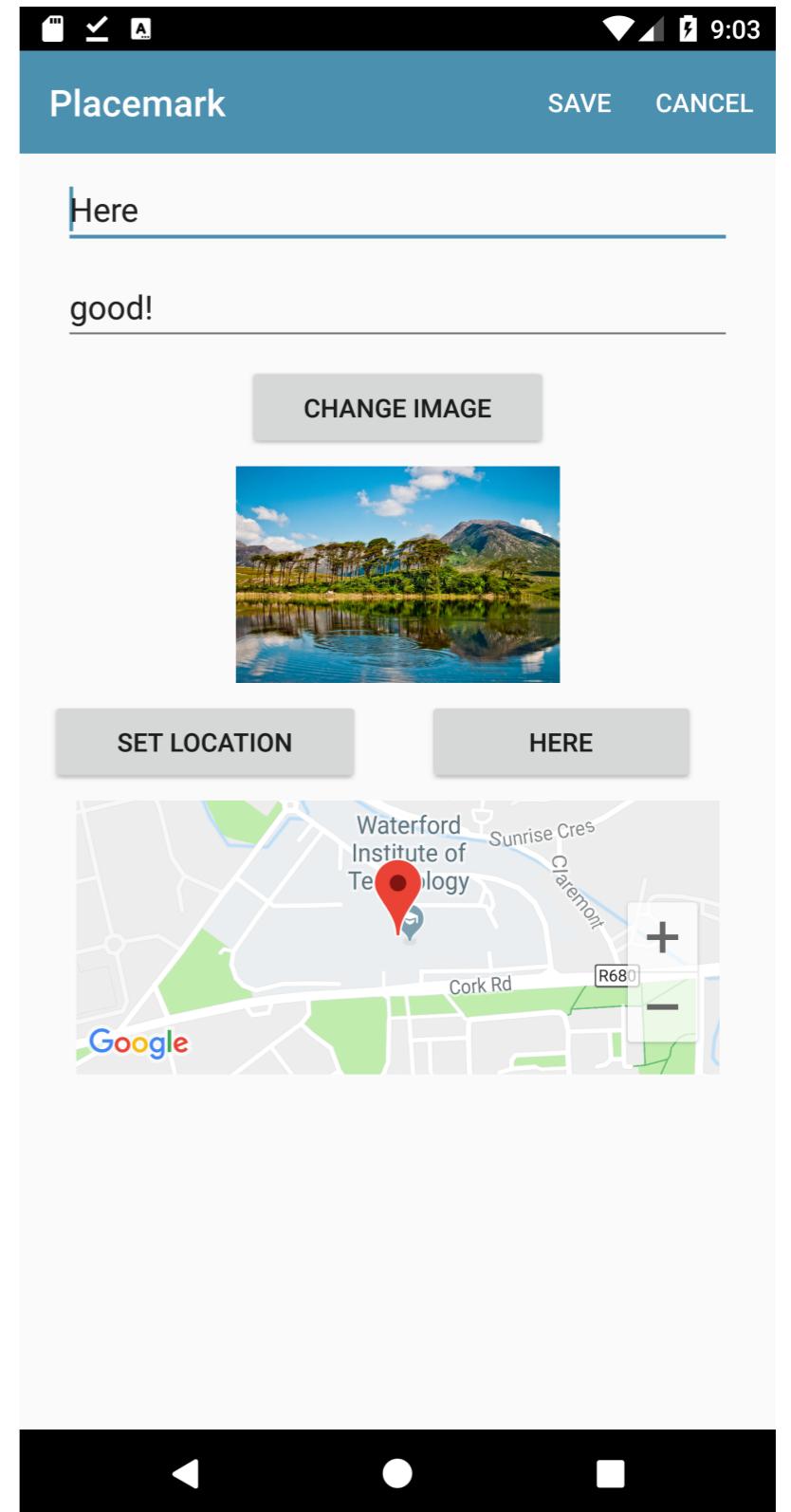
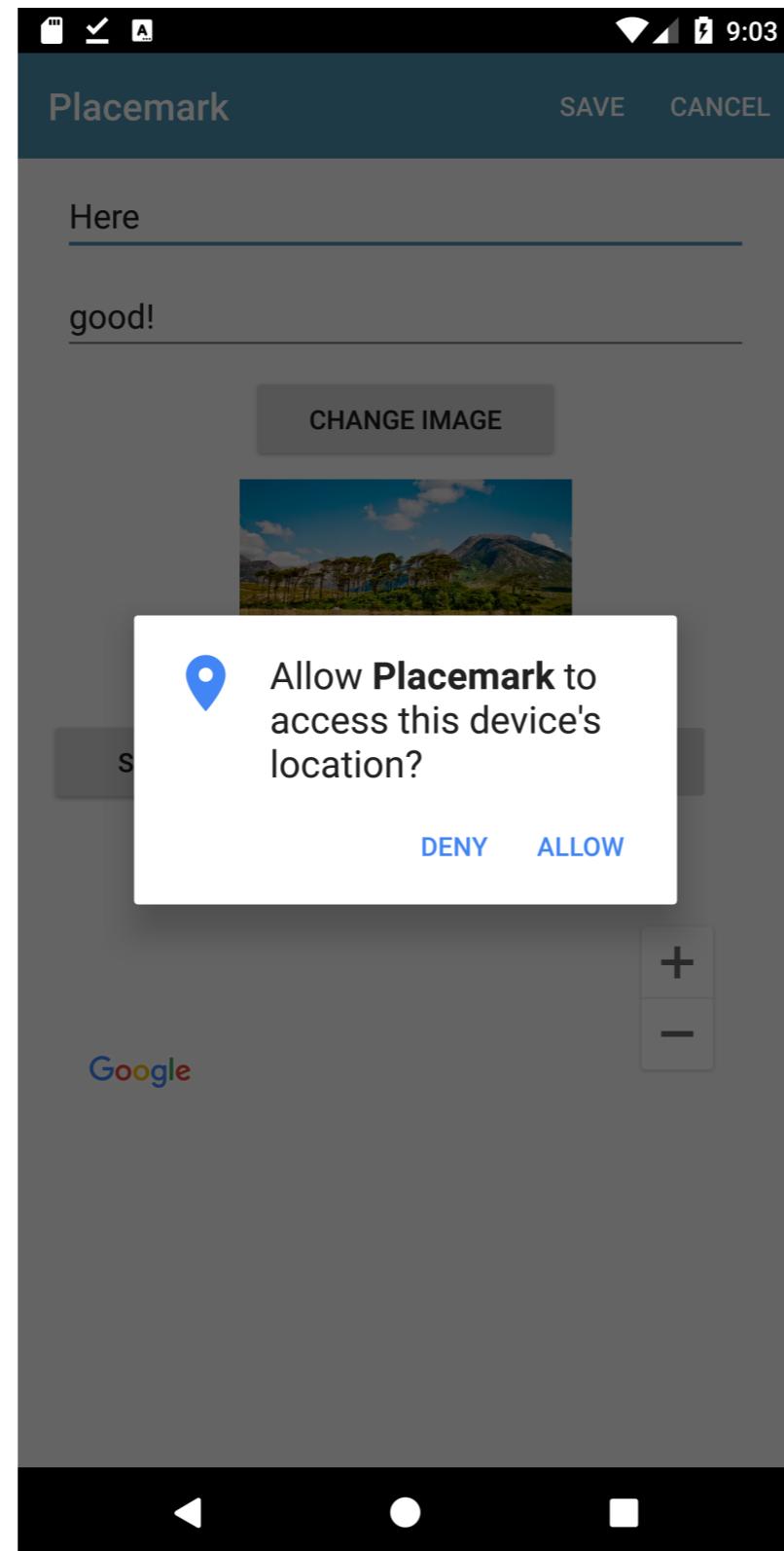
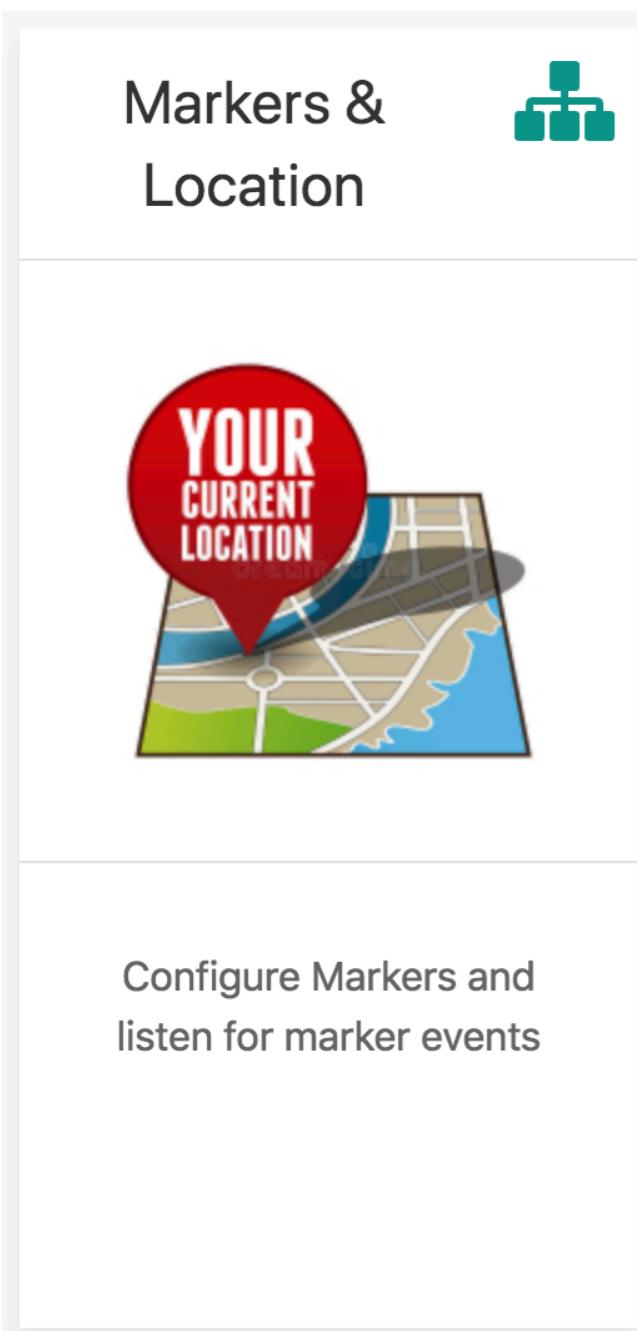
Map & Landscape

Managing embedded maps.
Initialisation and manipulation. Managing a landscape perspective.



Display Map of all placemarks

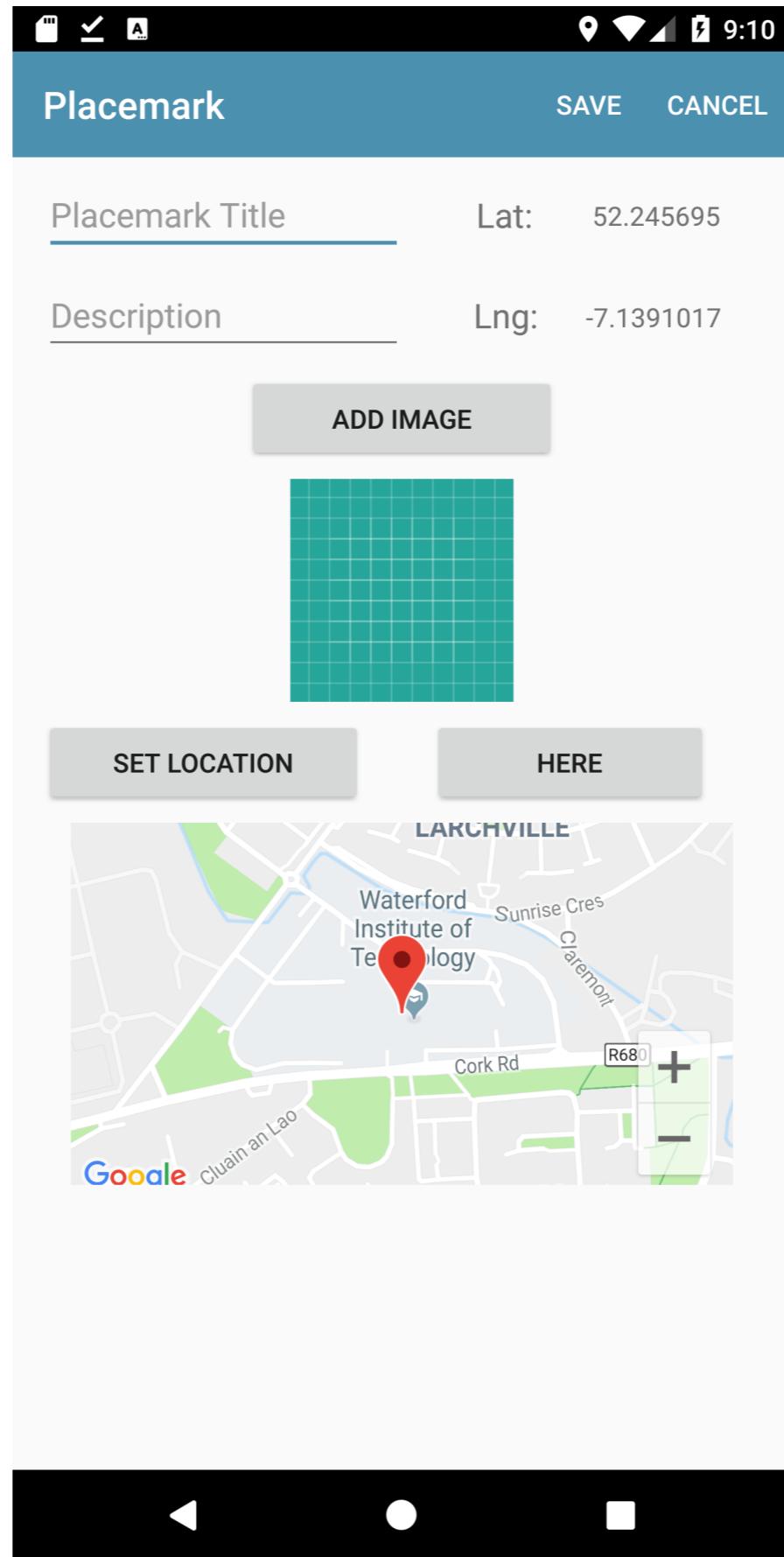
Support current location



Location Tracking

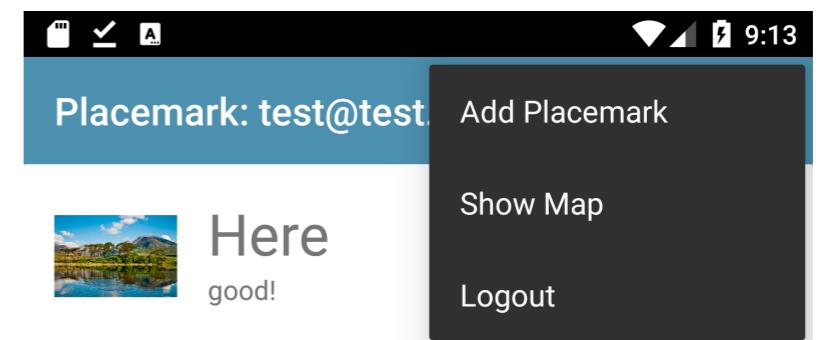
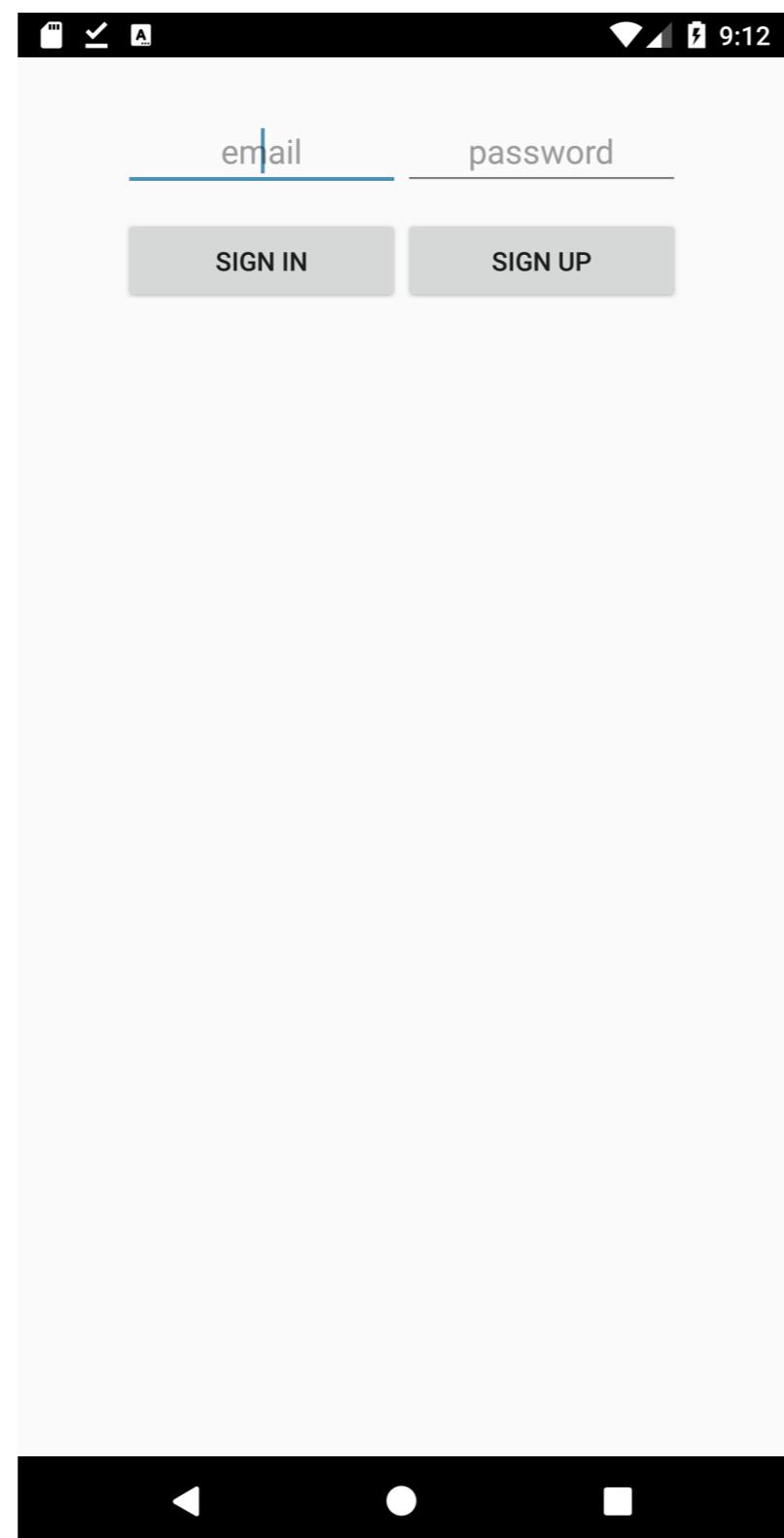
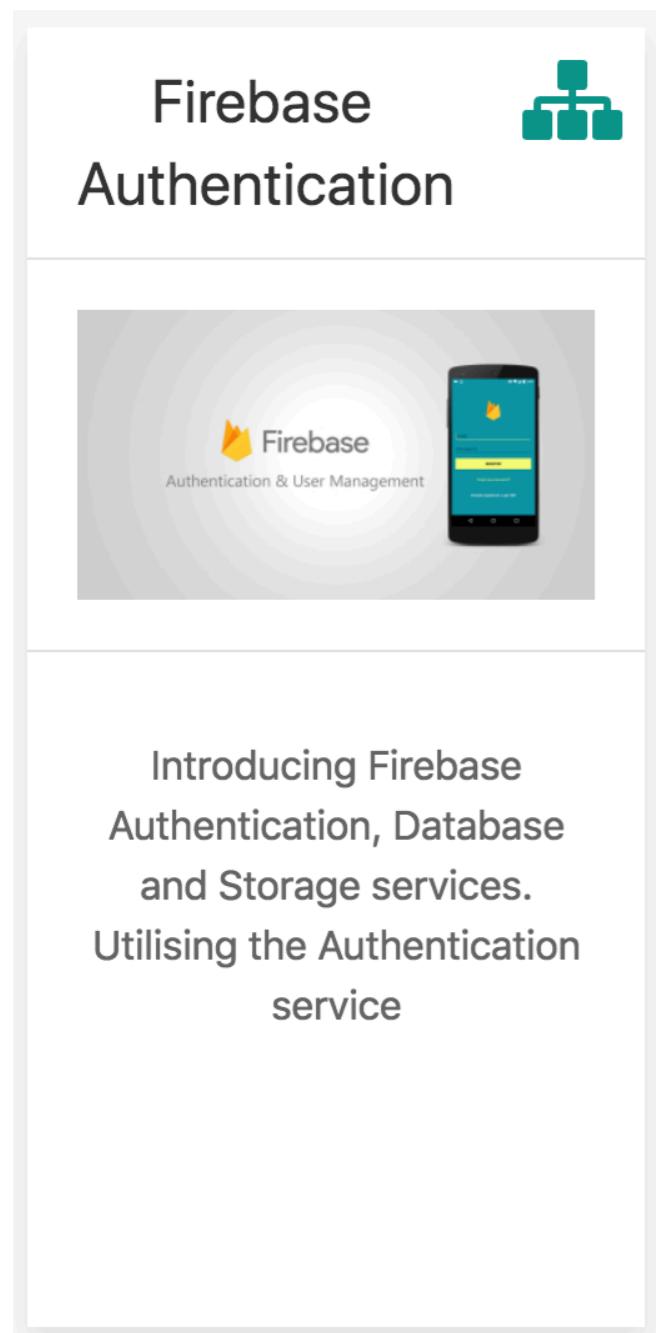


Track locations in real time.
Update UI in this context.
Rationalise approach to
managing component
versions.



Track current
Location

Authentication



Firebase Database



Replacing Rooms with
Firebase Database services.

Moving images from the
Storage Access Framework
to Firebase Storage

Cloud Database

Assessments

Two Project - Assignment 2 One Builds on
Assignment 1

Assignment 1:
Hillfort Survey



Assignment 1: Hillfort Survey

Assignment 2:
Hillfort Explorer



Assignment 2: Hillfort Explorer