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Introduction and Project Motivation

- Wyze is a tech start-up specializing in accessible and innovative smart home products.
- Conventional smart home apps display devices in a list view, lacking visual context in physical spaces.
- Wyze Places seeks to use a map view to visually communicate device statuses and locations.
- The scope includes designing, developing, and testing Android and iOS apps realizing this goal.



Requirements and Objectives

INDUSTRY EXPECTATIONS

DELIVERABLES

The following features should be functional:

- “Add, edit, delete map”
 - Users can choose the floor plan shown.
- “Add, edit, delete devices on the map”
 - Users can place, reposition, and remove devices.
- “Access and control devices from the map”
 - Users can toggle icons to turn devices on/off.
- “Integrate with existing Wyze backend services”
 - User credentials can be verified by Wyze.
 - Users can make API calls to enable actual on/off of physical Wyze devices.

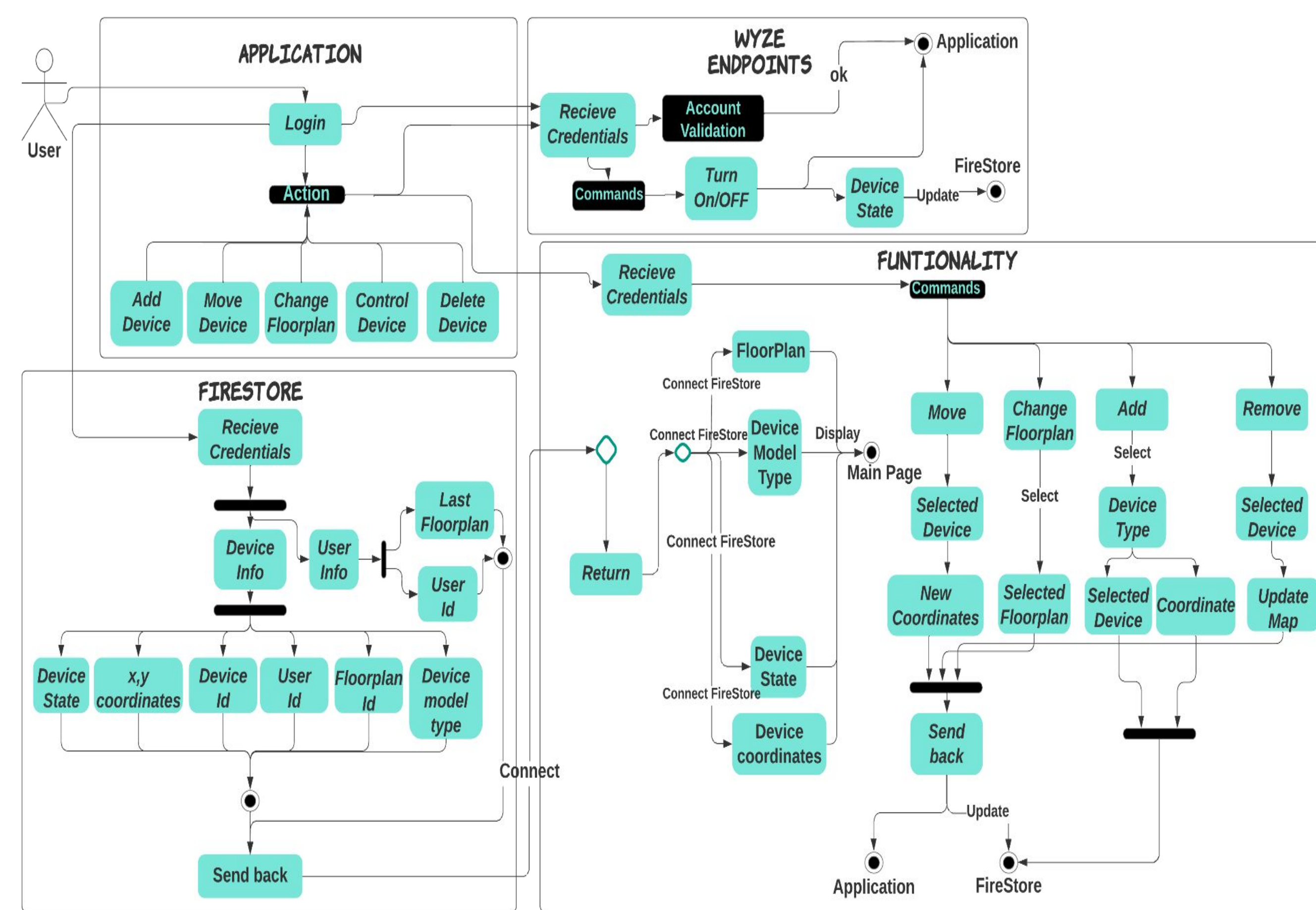
- Minimum Viable Product (Winter)**
 - Static map floor plan (png)
 - Device addition, placement, and deletion
- Prototype 2.0 (Spring)**
 - Device actual on/off
 - Floor Plan Customizability
 - Login
 - Saving State

TWO SUB-TEAM APPROACH

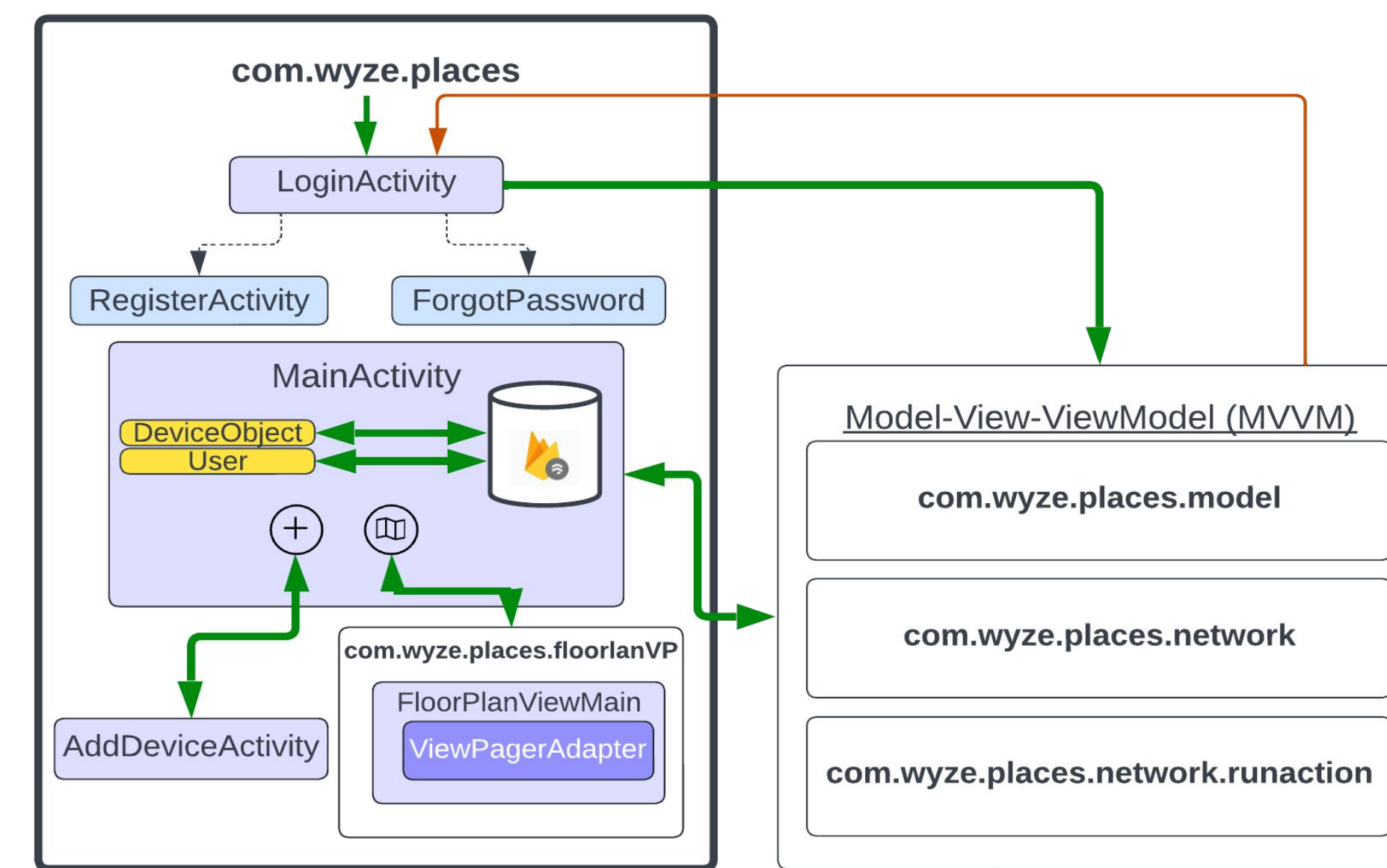
- Android:** Florence, Jeremy, Allen
- iOS:** Jimmy, Joa, Nathan

System Design and Architecture

UNIFIED MODELING LANGUAGE (UML) DIAGRAM



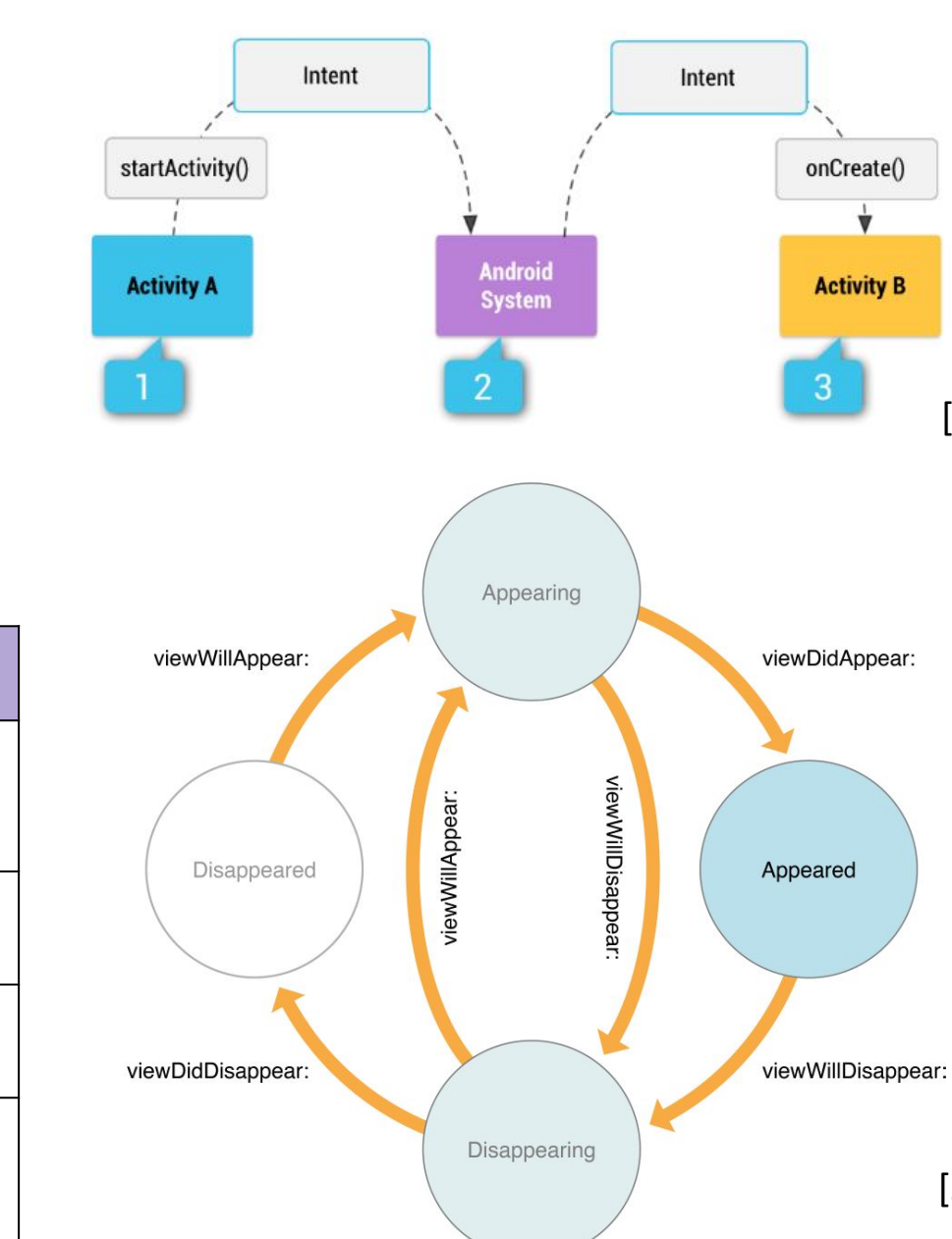
Android and iOS Implementations



	ANDROID	IOS
Programming Language	Kotlin	Swift
UI Formatting	XML	UIKit
Tools	Android Studio, GitHub	Xcode, GitHub
Debugging and Testing	Timber	Swift REPL

APP NAVIGATION

- Activity = Individual screen and its set of functionalities
- Intents = Mapping of data and actions between activities



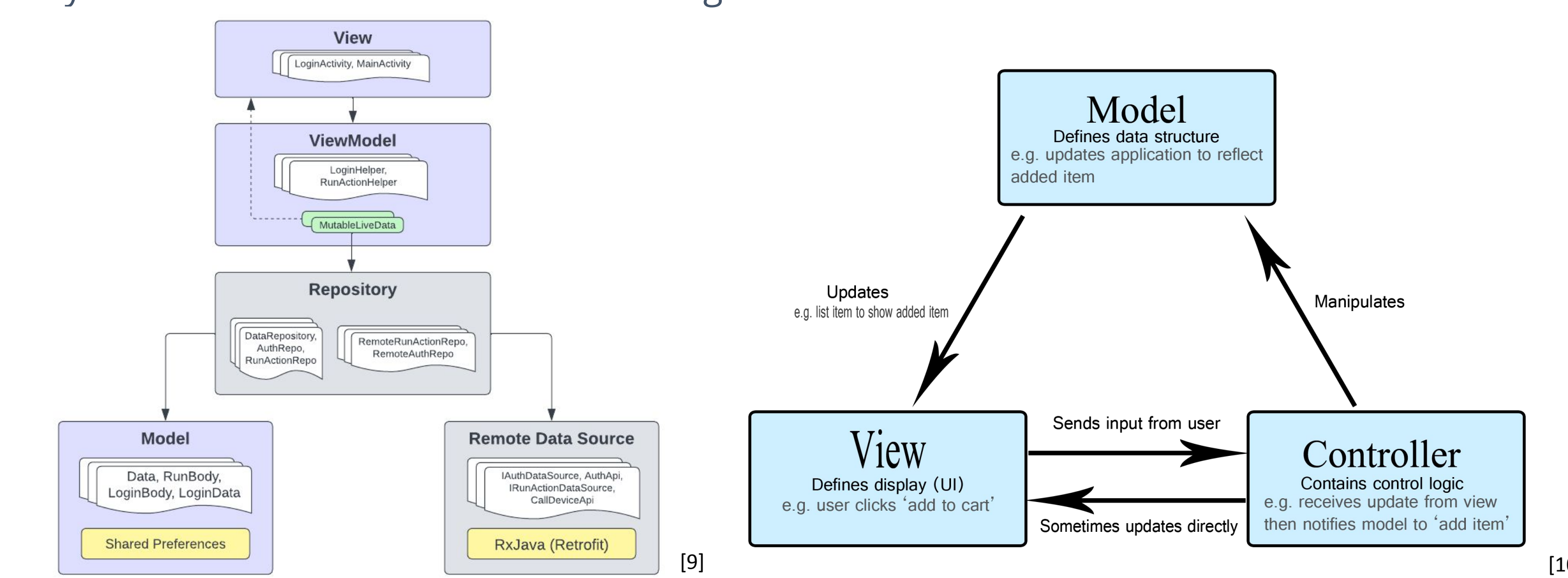
Networking Approaches

Android: MVVM ARCHITECTURE

- Retrofit [6] - REST client; API auth; manager of network requests
- OkHttp [7] - HTTP client
- RxJava [8] - reactive programming library; asynchronous/observable event handling

iOS: MVC ARCHITECTURE

- UIKit - Framework; manage app views and interactions between user and app
- Foundation - Library; provides functionality for the app/frameworks (i.e., data storage)



Data Storage

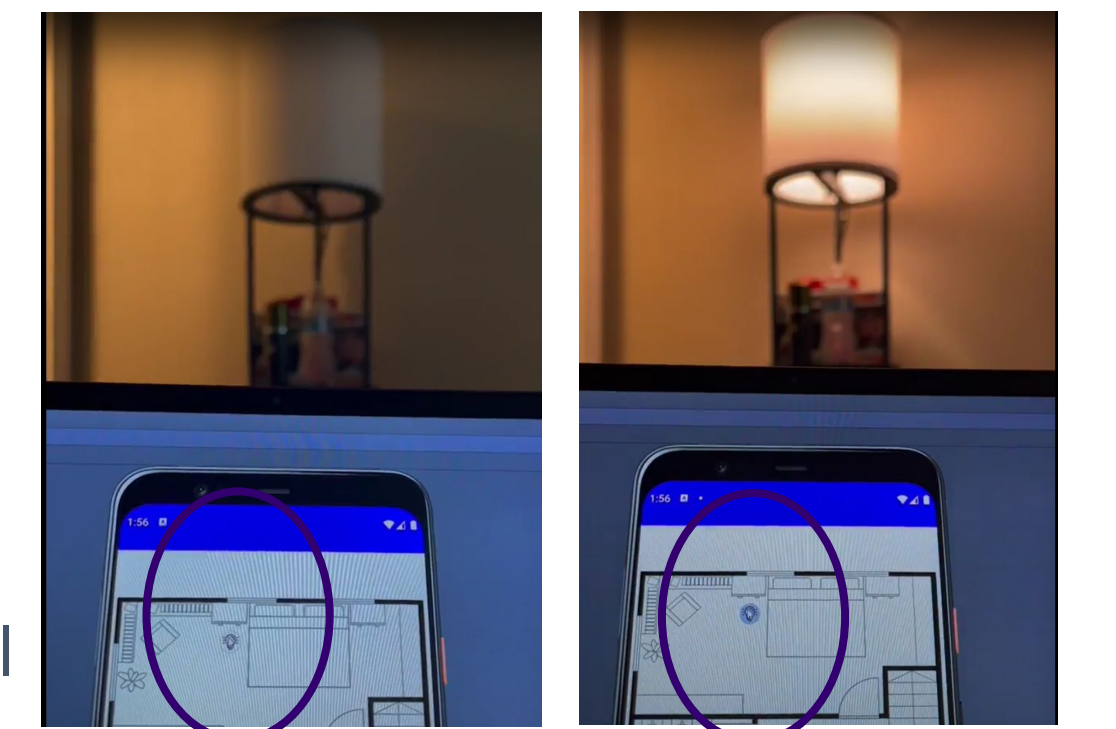
CLOUD FIRESTORE

- Wyze Places uses a Firebase document database called Cloud Firestore to save the users' device data across the Android and iOS apps.
- The “devices” collection has 7 fields: device_id, floorplan_id, status (true = on, false = off), type, user_id, x_location, and y_location.
- The “users” collection has 2 fields: last_floorplan and user_id.

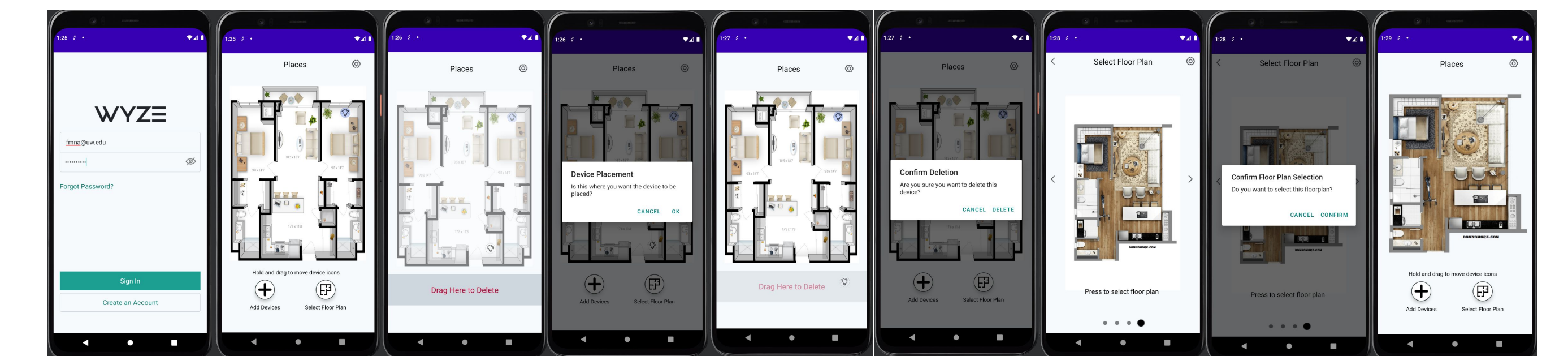


Results

- Users can perform the following tasks:
 - Customize and save floor plan maps.
 - Add, edit, and delete bulb, cam, and plug icons.
 - Turn physical devices on/off from the map.
 - Login after Wyze credential authentication.
- The Android team has met industry requirements.
- The iOS team has met the requirements of “add, edit, delete devices on the map,” “access and control devices from the map,” and “integrate with existing Wyze backend services” to verify user login.



Android



iOS



Conclusion and Future Work

- We have developed easy-to-use mobile apps which provide visual context to smart home interactions and are integrable with Wyze's existing infrastructure.
- As a team with no prior mobile development experience, we learned the following:
 - How to code in Kotlin and Swift
 - How to work with networking and backend services like Cloud Firestore
 - How to effectively design an app's user interface and user experience.
- Future improvements to the Wyze Places apps may include an integrated camera feed, a user-uploaded floor plan, and further user interface improvements.

References

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