KITCHEN COMPANION

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Problem and Solution

Choosing recipes to cook, specifically during a busy work week, can be hard and tiresome. Even if you have an idea of what you want to eat, you might find out that you are missing a key ingredient, making the process of choosing what to cook even more frustrating

This project aims to help alleviate any stress when it comes to figuring out what to cook. By using kitchen companion, users will spend less time trying to figure out what they can cook, and more time eating delicious meals.

Accomplishments

Functional Android application where users can keep stock of the ingredients in their kitchen, maintain a recipe book of their favorite snacks and meals, and quickly see what recipes they are able to cook with the ingredients they have in their kitchen.

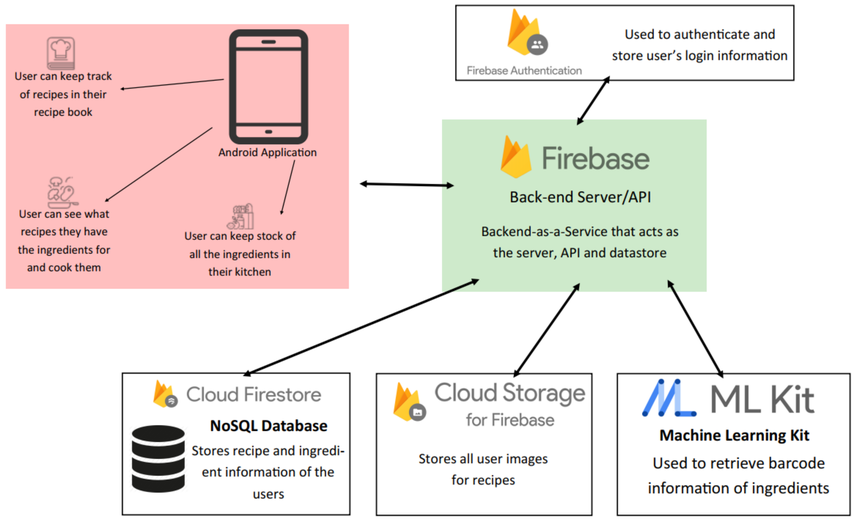
Successful integration of cloud resources from Google Firebase, making the application consistent and accessible on a large scale.

User can scan barcodes of ingredients to quickly add ingredients to their kitchen stock, and upon finishing cooking a recipe, their stock will automatically remove the ingredients they just used to cook the recipe.

Design

Android application written in Kotlin, using Android Jetpack Navigation libraries to write consistent code across Android versions and devices with an effort made to follow MVVM architecture's best practices.

Project leverages Google's BaaS Firebase for the server, datastore, and all connections between them and the application. Cloud Firestore is used as a NoSQL database storing all user data for recipes and ingredients. Cloud Storage is used for any images needed by users. Project also utilizes Firebase Authentication for user authentication and Google's ML Kit for retrieving and parsing barcode information for use in ingredient storage. A design diagram illustrating the project's design can be seen below.



Challenges

While software development has been my primary focus, mobile development is something I've never done. On top of that, I had no experience with developing with the cloud or with Kotlin prior to starting this project.

Kotlin, being a fairly new programming language (specifically Android development with Kotlin), has best practices changing on the daily. I often would find resources I was using to learn things only being a few months old, but already not the best practice for developing. Keeping up on these things took a lot time and effort and I would often be left with little documentation on the newest, cutting edge practices and solutions.

Barcodes not having any universal UPC data made finding ways to correctly and accurately parse scanned barcodes a difficult undertaking.

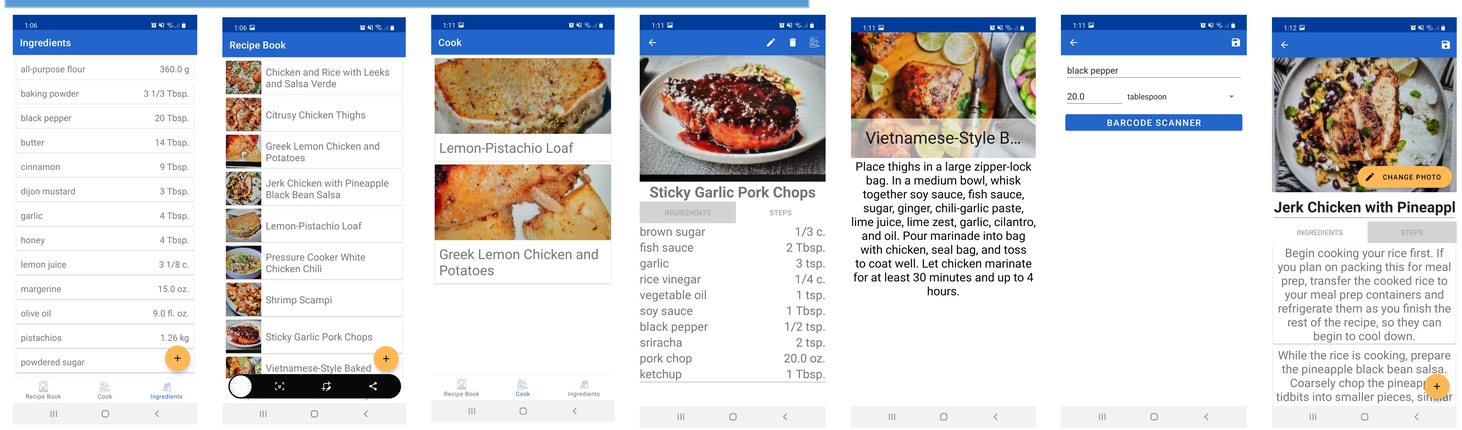
Future Plans

Better Design: Having little creative design experience, the application could definitely use a facelift to be more appealing to users.

Better Recipe Retrieval: When working on recipe retrieval, I often hit roadblocks preventing me from doing exactly what I wanted to do (possibly due to database design). The feature is in a working state, but could be improved to include things like showing partially cookable recipes (letting the user know what ingredients they are missing, etc.), letting users filter their cookable recipes by an ingredient, etc.

More Intelligent Standardization: Currently, the user is very responsible for how they store ingredients and recipes, and there are a lot of cases where recipes might not be retrieved when a user would expect them to. Work to be done in this regard includes things like tagging ingredients so users can store ingredients based on something like brand but still have them both count for recipes that use the ingredient, etc.

Demo Pictures



Technologies Used

Kotlin

Cloud Firestore

ML Kit

Firebase Authentication