# Mobile Development: Feature to Promote Sales for a Movie Streaming Application

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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# Mobile Development: Feature to Promote Sales for a Movie Streaming Application

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## ABSTRACT
A California-based movie streaming company had difficulty finding new and exciting ways to encourage users to continue purchasing movies through its company. The team implemented a new *Sets* feature for its mobile and web platforms that will promote the purchase of movies to complete a movie collection. I helped implement the UI of this feature using a framework called Jetpack Compose in Android Studio Code, along with the view model logic necessary to connect the UI to the backend data. This includes info related to each set and saved user information such as past transactions and user preferences. Future work that will be necessary for the *Sets* feature is to analyze how it affects the sales of the app and consider how the vast majority of users will react to the app.

## 1. INTRODUCTION
"Without change there is no innovation, creativity, or incentive for improvement"
–William Pollard

The mobile engineers at the movie streaming company felt that the application was plateauing and progress was becoming stagnant. Users did not have major incentives that would motivate them to continue purchasing movies. The mobile engineers were stuck in a monotonous period of solely fixing bugs, creating small design changes, and making performance improvements that were barely noticeable, until one of the engineers came up with an exciting new feature to implement that involved major UI design changes. Multiple teams that specialized in different fields came together to make this idea a reality. The goal of this new project is to increase sales with the use of eye-catching animations and provide different sections such as "Almost Completed" or "My Sets Library" that would be unique to each user. The new feature would potentially appeal to users who are movie collectors.

## 2. LITERATURE REVIEW
Some studies showcase the correlation between mobile app UI design features and consumer behavior. Martinez (2017) "investigated the effects of three types of mobile design features on a consumers' mobile app stickiness intention, as mediated by consumer's emotional response." The study analyzes different types of mobile design features that trigger a certain response from the application's target audience. It also goes in-depth on how atmospherics can help with marketing strategies in applications. Martinez defines atmospherics as: "Conscious designing of space to create certain buyer effects, specifically, the designing of buying environments to produce specific emotional effects in the buyer that enhance purchase probability." Atmospherics include aspects of the application such as lighting, ambient sound,

merchandise layout, and other features (Dollarhide, 2021). With this in mind, we made sure all components of the new feature were simple and aesthetically pleasing to positively modify consumer behavior on the application.

Zhu (2018) explains how online sales can be increased by Emotional User Interface (EUI) design. EUI "aims to create products that elicit appropriate emotions from the users to create a positive user experience." The study examines how multiple different designs, including animation, improve user experiences by appealing to their emotions, which positively affects product sales. The team included an animation component that would trigger the users' sense of success. The animation is a circular progress bar that shows how close the user is to complete a set. The animation associated with a completed set is more appealing than an incomplete one, this in turn motivates users to strive for completion by purchasing more movies.

## 3. PROPOSED DESIGN

This section will discuss what had to be done to organize the new Sets feature throughout the company. It will cover the design process of the feature as well as the process the mobile team took to implement the new application feature.

### 3.1 Proposed Feature Idea

The new Sets feature was proposed by the head of the Android development team. To make his idea a reality he organized a company meeting that consisted of select individuals from all different teams, (i.e., marketing, design, analytics, project management, product management, Android, iOS, etc.) From here, we were able to get a holistic overview of how the feature would work as well as receive input from multiple areas of expertise.

### 3.2 Feature Design Process

To get a clear view of what the feature would entail, the design team used a tool called Figma, a UI/UX design tool, to show teams what this feature would look like on both web and mobile platforms. Utilizing a tool like Figma makes it easy for designers to collaborate since it is a shared project they could simultaneously work on. It not only makes the designers' lives easier but the programmers' lives easier as well, since they now possess a clear model of what the end product is supposed to look like. The designers made sure the new feature had a similar layout to other pages within the app so it would not confuse existing users. They also wanted to try something new by including little animations that would get the user's attention such as a moving progress bar to show set completion as well as a fading app bar when the user scrolls.

### 3.3 Mobile Team Implementation

To implement the new Sets feature the mobile team had to use various tools and processes in order to successfully complete it. This section will explain how the tools and techniques used throughout the process worked as well as the challenges that came up along the way.

#### *3.3.1 Collaboration Tools*

For the mobile teams to successfully work together we used collaborative tools such as Jira and Gitlab. Jira was used to keep track of tickets (tasks) for sprints. Every sprint lasted for two weeks and at the end of each sprint the Jira board was reassessed, and new tickets were added while older ones may end up staying for the following sprint. Each ticket goes through multiple iterations before it is officially marked as complete. These iterations included Open, In Progress, Code Review, Merged, QA Review, and Product Review.

Gitlab is a repository that allows software developers to collaborate on coding projects. There were separate Gitlab repositories for both the Android and iOS teams. For developers to merge their code into the main project, each person had to create a new branch as well as a merge request so other fellow developers could review the code before it is merged into the main project code.

### *3.3.2 Android UI Framework*

The Android team used Jetpack Compose, a UI framework, in Android Studio Code to implement the front end of the new Sets feature. Utilizing this framework makes implementing the UI much simpler since it requires fewer components and less code compared to XML. The Mobile developers followed the Figma designs to create the feature's UI. I specifically worked on the Sets Detail pages, as well as the educational banner that introduces the new feature to users and explains how it works.

### *3.3.3 Mobile Application Structure*

To build the new feature we used a software design pattern called Model-view-ViewModel (MVVM), as shown in Figure 1. MVVM is a UI-based design pattern. Its main objectives are to provide a rich UI, testability features, code more reusability, and complex data binding. It improves "the separation of the business and presentation layers without any direct communication between each other" (Kumar 2021). This separation allows the developer to work on the front and back-end of a component without interfering with one another.

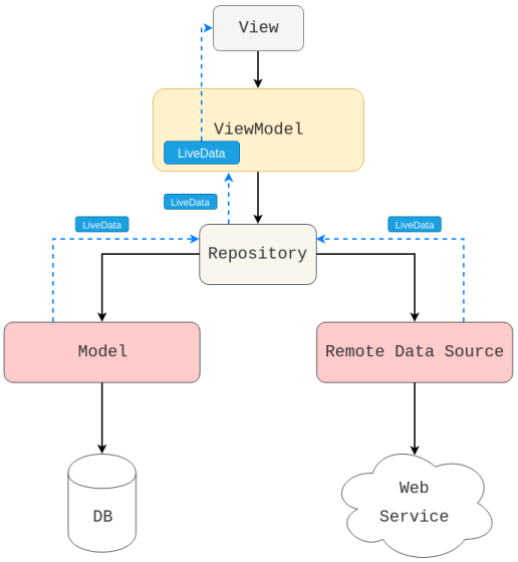


*Figure 1. MVVM Architecture*

### *3.3.4 Testing*

Testing done by the android developers primarily consisted of testing the ViewModel to make sure the correct input was collected from the view layer to be eventually sent to the database. To test the code we primarily used unit tests where the expected and actual outputs were compared.

### *3.3.5 Challenges*

The team and I encountered various challenges when implementing the new feature. One of the main issues involved the optimization of the app's performance, specifically the UI. Performance issues can cause the app to freeze or become laggy, which should be avoided as much as possible. These issues were especially prevalent when we tried to implement certain design features such as a fading app bar because it requires a continuous update to the UI. Since Jetpack Compose UI is still a relatively new framework, it is difficult to find solutions to specific performance problems we may run into. Our developers have to have a thorough knowledge of how the framework works and also keep updated on changes or improvements made to the framework.

## 4. ANTICIPATED RESULTS

Although this feature has not yet been released it is expected to excite existing users of the app who may already have a purchase history. It will give them a sense of achievement when they have all the movies in a set due to the visual evidence showing completion, such as a golden crown or animation. It is designed to appeal to the mindset that once collectors have one part of a series, they will want to own the rest.

## 5. CONCLUSION

The implementation of this new feature is important for the company to promote its movie sales. Prior to the development of the new feature, users did not have major incentives that would motivate them to continue purchasing movies. With certain mobile application UI design choices, the Sets feature is projected to positively affect consumer behavior.

## 6. FUTURE WORK

Future work that will be necessary for the *Sets* feature is to analyze how it affects the sales of the app and consider how the vast majority of users will react to the app. This includes getting user feedback on what they like and dislike about the feature, so the company knows what needs to be improved.

## 7. UVA EVALUATION

The most useful courses at UVA that provided the skills I needed to succeed during my mobile development internship were CS3240 Advanced Software Development Techniques and CS4270 Mobile Application Development. Both classes consisted of a semester-long team project.

The most useful course was Advanced Software Development Techniques. It explained the different roles that are important in software development by assigning students specific jobs within the team. The course incorporated techniques used by agile development teams such as sprints and weekly meetings, which is very similar to the work dynamic I experienced over the summer. The curriculum also taught us how to use GitHub, which is an essential collaboration tool in the world of software development.

The course Mobile Application Development also taught me how to work with a small and agile team to create a mobile application. Within this course, I got to use the design tool called Figma, which was also used by my development team over the summer.

Overall, these courses helped me gain experience in what it is like to work on a team of software developers to achieve an almost three-month-long project. I got to be there for every step, requirements planning, design, coding, as well as testing. The courses also allowed me to become familiar with tools that are often used in the work field such as GitHub and Figma.

## 8. ACKNOWLEDGMENTS

I would like to thank my mentor on the Android development team. He spent many hours helping me get familiar with the team tools and showing me how everything worked within the application. He reviewed all my code and taught me so much throughout my time working there. Whenever I was stuck or ran into a problem he did not hesitate to give me a helping hand. I was so grateful for his presence and mentorship.

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