ÇUKUROVA UNIVERSITY

ENGINEERING FACULTY

DEPARTMAN OF COMPUTER ENGINEERING

GRADUATION THESIS

Development of an Android Recipe Application

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ABSTRACT

This project was prepared within the scope of the Graduation Thesis course of the Department of Computer Engineering. It presents the development of an Android recipe application designed to enhance users' culinary experiences by allowing them to discover, save, and manage their favorite recipes. The main page of the application features randomly selected recipes, popular dishes, and various categories, providing a comprehensive browsing experience. Users can explore recipes by category, add them to their favorites, and access detailed instructions along with YouTube links for a more interactive cooking experience.

The application was built using modern Android development practices and libraries, including Retrofit for network operations, Room for local database management, Glide for image loading, and ViewModel along with LiveData to implement the MVVM architecture. These technologies ensure a responsive, efficient, and user-friendly application.

CHAPTERS

Introduction

Today, recipes garner significant interest among culinary enthusiasts. However, accessing this vast culinary culture and managing recipes can sometimes be challenging. This project aims to overcome these challenges and facilitate users' easy access to recipes by developing an Android recipe application.

The homepage encourages users to explore various recipes while providing navigation between popular dishes and different categories. Users can also manage their favorite recipes. Each recipe includes a YouTube link to demonstrate the preparation process. This way, users can both read the recipe and watch the video, gaining a better understanding of the cooking process. With these features, this recipe application aims to offer users a fun and easy experience.

Application Design

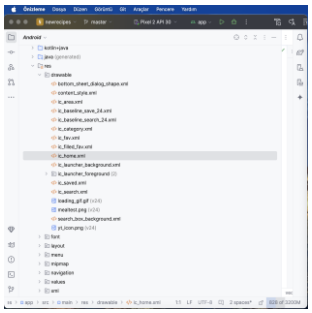
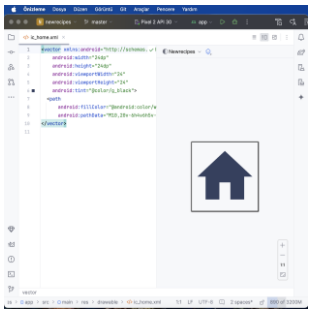
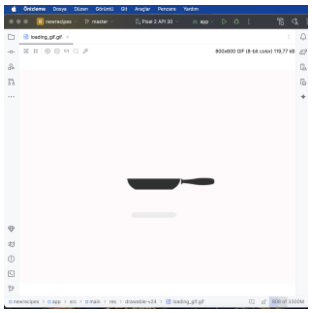
XML FİLES

The design part is typically done using XML (Extensible Markup Language) in Android Studio XML is a markup language used in the interface design of many Android applications. Android Studio's design tools provide a visual editor, offering a user-friendly interface instead of editing the XML code directly. These tools allow users to easily create and organize their interfaces by dragging and dropping buttons, text fields, lists, images, and other components.

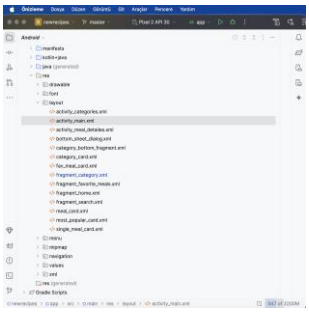
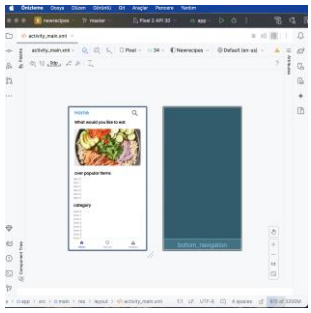
XML files are used to define the appearance and behavior of a particular activity or component. Android Studio's preview feature allows the user to see in real-time how the design will look. This way, developers can easily check if the design appears as desired.

In Android Studio, the res (resources) folder contains the application's resource files, including user interface design, texts, images, layouts, and other static content. This folder is divided into various subfolders to organize and manage different components of the application:

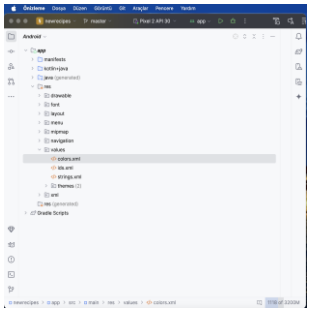
- **res/drawable**: Contains drawable resources such as PNG, JPG image files, and XML-based graphics. This is where the search bar, favorites, categories, home icons, the frying pan image that appears at the start of the application, and the YouTube icon are stored.

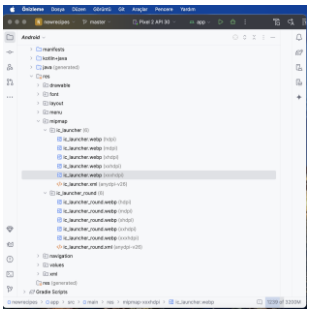
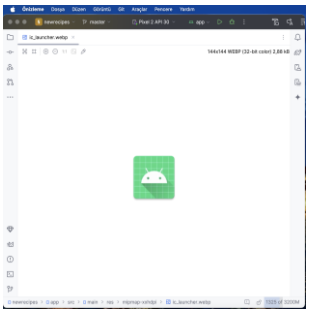
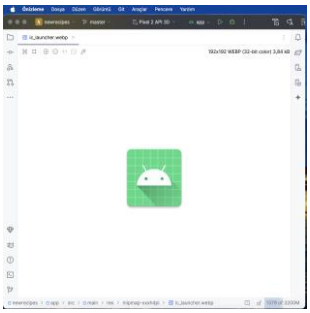
- **res/layout**: Houses XML files that define the screen layouts of the application. This includes the main page, favorites, categories, search page, category detail page, and recipe detail page used in the application.

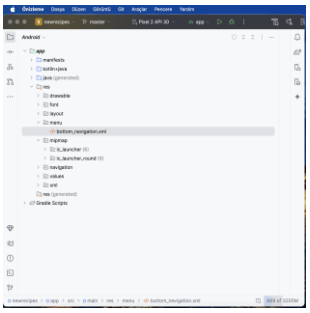
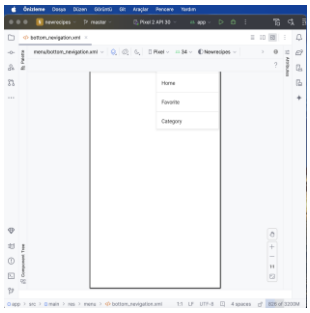
- **res/values**: Contains XML files with various values such as colors, strings, dimensions, styles, and themes.



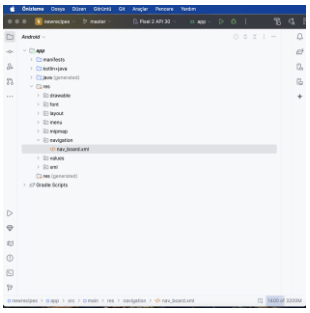
- **res/mipmap**: Contains launcher icons optimized for different screen resolutions.

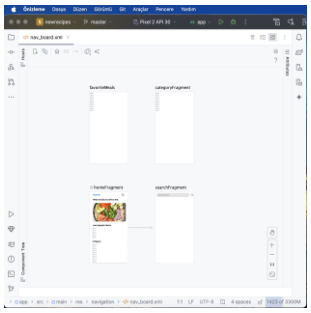




- **res/menu**: Stores XML files that define the in-app menus.

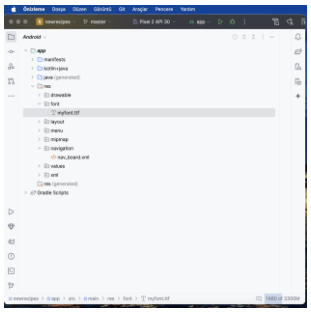



- **res/navigation**: Contains XML files that define the navigation graph for the application, managing the navigation flow between different screens. This helps in organizing and visualizing the various destinations and actions within the app.





- **res/font**: Contains custom font files (such as TTF or OTF) used in the application. This allows developers to easily use custom fonts throughout the app, enhancing the visual appearance and user experience.



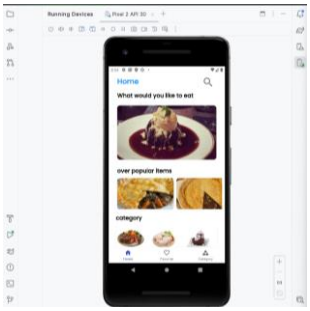
The res folder helps organize and manage the application's user interface and other resources. These subfolders allow resources to be easily optimized for different screen sizes and resolutions.

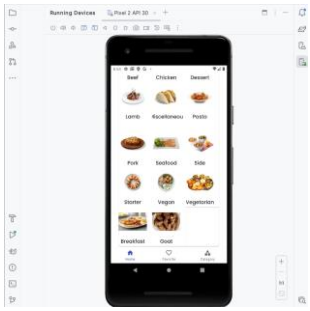
APPLICATION PAGES

Our recipe application consists of six main pages: the home page, favorites, categories, search page, category detail page, and recipe detail page.

1.Home Page

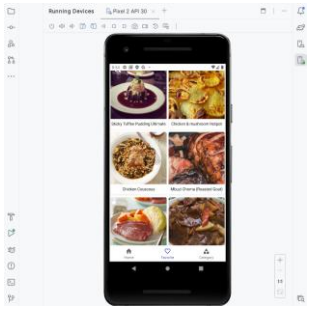
At the top of our home page, there is a "Home" text and a search button. Just below, users are asked "What do you want to eat?" and random recipe suggestions are displayed. The bottom of the home page features popular recipe suggestions. Below the popular recipes, there are categories listed. At the very bottom of the home page, there is a small menu consisting of home, favorites, and categories.





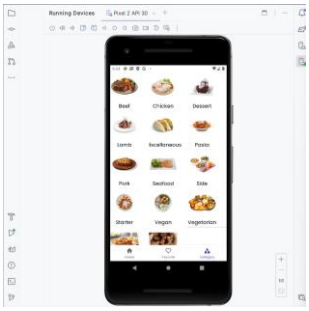
2. Favorite Page

Favorite page, users can find the recipes they have marked as favorites. At the bottom of the page, there is a small menu consisting of three items: Home, Favorite and Category similar to the one on the home page.



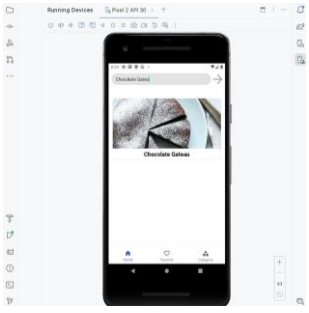
3. Category Page

The Category page contains the relevant categories. There is a small menu consisting of three items: Home, Favorite and Category .



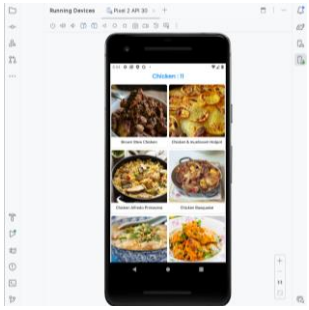
4. Search Page

The search page enables users to easily find the recipes they desire. Here, users can search for recipes by name or category. At the bottom of the page, there is a small menu found on every page of the application.



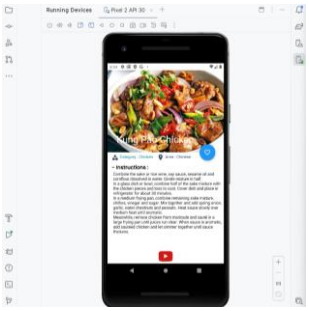
5. Category Detail Page

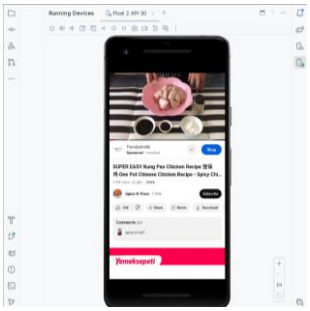
The food category detail page contains recipes belonging to a specific category. At the top of the page, there is information about how many recipes are available in that particular category .



6. Recipe Detail Page

The recipe detail page shows the details of a recipe. At the top of the page, there is the recipe's image and name. Just below, there is information about the recipe's category and its cultural origin; next to this information, there is a favorite button, which users can click to add the recipe to their favorites. In the middle section, the recipe details are displayed. At the bottom of the page, there is a YouTube button. If users wish, they can click this button to watch the recipe on YouTube.





USED TECNOLOGIES

1. RETROFIT

Retrofit is a library used to manage network requests in Android applications. It is commonly preferred for interacting with RESTful APIs. Retrofit allows you to easily create HTTP requests and handle responses. It facilitates the conversion of data in JSON format and is compatible with features like Coroutines for managing asynchronous tasks. This simplifies managing network requests and fetching data, making it faster and more straightforward.

2. ROOM

Room is a library used to simplify local database access in Android applications. It is SQLite-based and abstracts SQLite database operations. This eliminates the need to write complex code for database operations. Room speeds up data access and enhances performance. Additionally, it natively supports SQLite queries for database operations, making database interactions easier and more reliable.

3. MVVM (MODEL-VIEW-VIEW-MODEL) AND LIVEDATA

MVVM is a design pattern used to organize the architecture of applications. Model represents the data source of the application. View represents the user interface. ViewModel facilitates communication between Model and View and implements business logic. LiveData is used to manage data flow between ViewModel and View. It automatically detects data changes, simplifying UI updates and preventing memory leaks.

4. COROUTINES

Coroutines are a feature used for asynchronous programming in Kotlin. They manage background tasks and help avoid callback hell. Coroutines make asynchronous code more readable and manageable. They also offer various coroutine structures for error handling and performance improvement.

5. VIEW BINDING

View Binding is a feature used to access views in XML files. It provides access to UI components without the need for findViewById() methods. This makes the code cleaner and more efficient. Additionally, View Binding ensures safe usage with compile-time error checking.

6. GLIDE

Glide is a library used for image loading and displaying in Android applications. It facilitates loading and caching of images from the internet or local device. Glide effectively manages memory and network resources, improving application performance and user experience. It also offers various image processing functions and allows easy customization of images.

CONCLUSION

In conclusion, this project is a recipe application and I aimed to create a recipe application to simplify people's lives. In this project, I developed a recipe application using TheMealDB API. The application allows users to explore different recipe categories, manage their favorite recipes, and discover interesting recipes. Additionally, I created sections for randomly selected and popular recipes using data retrieved from the API. Throughout the development process, I leveraged various modern Android technologies. By employing the MVVM architecture, I effectively managed the application's data and dynamically updated the user interface with fresh data. Using the Retrofit library, I sent network requests to fetch up-to-date data from the API and presented it to the user. Furthermore, I utilized the Room library to create a local database and store recipes locally. In the application, I utilized Activities and Fragments for different user interactions, enabling easy navigation for users. By incorporating technologies like Adapters, Glide, and View Binding, I enhanced the user interface and optimized data presentation. Bringing together all these technologies, I developed a user-friendly recipe application.

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