**Software design documentation**

**Title and personnel**

Document title: Bake Mate app Software design document

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**Foreword**

This document is designed to describe the design details and implementation scenarios for the XXX application project. The app is designed to provide users with baking tutorials and recipes, with user interface design, animation effects, Recyclerview applications and other functions. Through this document, we present the requirements specifications, overall design, user interface design, key technologies, testing and user experience analysis, and final conclusions.

**Summary**

This document describes the software design of the BakeMate Bake Learning app, including requirements analysis, overall design, user interface design, key technologies, testing, and user experience analysis. BakeMate Baking learning app is a mobile app designed for people who want to learn how to bake. It allows users to easily master the production methods and techniques of all kinds of baked goods.

**Background**

Baking is an increasingly popular way of life that can bring fun and happiness. But, for many people who want to try baking, they may lack the relevant knowledge and skills, or do not know how to choose the right recipes and tutorials. BakeMate Baking learning app aims to provide users with an easy to use, rich content, powerful, excellent experience of baking learning platform, so that users can easily learn and enjoy baking. This project, developed to meet users 'needs for baking learning, is consistent with the company's technology strategy, product strategy, and the team's quarterly goals.

**Objective**

1. Provide a library of recipes containing most of the baked goods, allowing users to choose the right food for baking learning according to their preferences and level.
2. Provide a clear and detailed baking tutorial interface, allowing users to follow the steps and prompts to make the food, and provide pictures and video tutorials to assist users in understanding and operation.
3. Provides a personal interface that allows users to view and edit their own personal information, as well as bookmark and share their favorite recipes and tutorials.
4. Use a friendly and beautiful user interface design, so that users can feel comfortable and happy when using the app.
5. Use advanced and reliable technologies and tools to ensure the performance, stability and safety of apps.
6. Use effective and feasible test methods to ensure that the quality and function of the app meet the requirements and expectations.
7. Use reasonable and effective user experience analysis methods to collect and evaluate user feedback and suggestions on apps for improvement and optimization.

**Requirement Specification**

**User needs: According to the user survey and interviews, we have summarized the main requirements of users for baking learning app as follows:**

· Users want to find recipes and tutorials for a variety of types and difficulty of baked goods in the app, including bread, cakes, cookies, pies, etc.

· Users hope to see the basic information of baked goods in the app, including the name, picture, brief introduction, production time, difficulty and so on.

· Users want to see the detailed tutorial of baked goods in the app, including the required utensils, materials, steps, temperature, time, etc., and will be able to help understand and operate through pictures and videos.

· Users want to be able to bookmark and share their favorite recipes and tutorials in the app, as well as view and edit their personal information.

· Users hope to enjoy a friendly and beautiful user interface, as well as a smooth and stable user experience in the app.

**Functional requirements: According to the user requirements, we have designed the following functional modules:**

· Home module: Show some recommended baked goods, and provide a search function, so that users can search for the food they want according to the keywords.

· Recipe module: Show a list of various types and difficulties of baked goods, so that users can choose the right food for baking and learning according to their own preferences and level.

· Tutorial module: Show the detailed tutorial of baked goods, including the required utensils, materials, steps, temperature, time, etc., and provide pictures and videos to assist in understanding and operation.

· Personal module: Display the user's personal information, including the user name, email address, mobile phone number, etc., and provide the editing function to allow users to modify their personal information. At the same time, it also shows the recipes and tutorials that users collect and share, so that users can easily view and manage their favorite content.

**Overall Design**

**structure**

The application consists of the following pages:

Main page: Round cast map, search function

Recipe page: Show a list of food sorted and quickly delivered foods for users to browse.

Baking tutorial page: Show the specific baking tutorials and recipes.

Personal page: displays the user's personal information and setting options.

Registration page: For user registration, enter the necessary personal information.

**major function**

The main features of the application include:

Main page: rotation map and preference search function

Food classification and food list presentation: display the list of individual food classification and fast delivered food in the main page for users to browse.

Display of the baking tutorial page: Users can click on the baking tutorial in the food list to enter the specific baking tutorial page and view the detailed baking steps and recipes.

Display and editing of personal page: Users can view and edit personal information, on personal page, including user name, password and mobile phone number, etc.

Registration function: Users can register through the registration page, enter the necessary personal information and complete the registration.

**User Interface Design**

**The user interface design follows the following principles:**

Simple and clear: avoid too many elements and information, highlighting points and functions.

Unified style: keep the overall color matching and icon consistent, use the Material Design UI frame.

Friendly interaction: Provide clear prompts and feedback, and let users know the current status and operation results.

Adaptability: fit different screen size and resolution to ensure the readability and aesthetics of the user interface.

**The user interface design includes the following sections:**

Introduction page: Show the name of the software and the baking picture, use orange color to make the user feel comfortable. Provide a button that provides users with access to the main interface. When jumping, use the FadeActivity animation to achieve the gradient effect.

Home: Show a rotation map to push the baked goods that users may like. Provide a search button that allows users to search for the food they want. Provide a bottom navigation bar that allows users to switch to recipe pages and personal pages.

Recipe page: Show two RecyclerView, one for food classification list and one for food display list. So that users can choose the right food for baking and learning according to their own preferences and level. In the food classification list, the name and background picture of the category are displayed. In the food display list, the name, picture, introduction, production time and difficulty of the food are displayed. When clicking on the food classification or food display, jump to the corresponding tutorial page.

Tutorial page: Show a detailed tutorial on baked goods, including the required utensils, materials, steps, temperature, time, etc., and provide pictures and videos to assist in understanding and operation. Use tables, lists, code blocks, and other elements to display the information.

Personal page: display the user's personal information, including the user name, email address, mobile phone number, etc., and provide a button for the user to enter the registration page for editing. At the same time, it also shows the recipes and tutorials that users collect and share, so that users can easily view and manage their favorite content.

Registration page: allows the user to enter or modify their user name, password, email, mobile phone number and other information, and provide a check box, so that the user can choose whether to hide the password. After clicking the registration button, the data is sent back to the personal page and a prompt for successful registration is displayed.

**Key Technology**

The following key technologies are used in this project:

Kotlin: A static type programming language based on JVM is simple, safe and efficient. It is the official recommendation language developed by Android.

Android Studio: An IntelliJ IDEA-based integrated development environment (IDE), specially designed for Android development, provides powerful code editing, debugging, testing, building and other functions.

Glide: A library for loading and caching images that automatically presses, scales, cuts, and more, and supports a variety of image sources and formats.

Material Design: A UI framework provided by Google that follows a set of design principles and specifications, providing a rich range of components and animation effects to create an aesthetically consistent user interface.

UI design: including color selection and collocation, to ensure the beauty and availability of the user interface.

Realization of animation effect: realize the gradient effect of jumping between pages through FadeActivity, and increase the fluency and beauty of interface switching.

Recyclerview Design and use: including the creation of Adapter and Domain, click on the processing of events, etc., to realize the display and interactive function of the food list.

Fragment Application: including view binding with Binding in the baking tutorial page to improve the readability and maintenance of the code.

Implementation of data transmission and registration function: use startActivityForResult and requestCode for data transmission and judgment, and realize the preservation and update of user registration function and personal information.

**The project has encountered several following technical challenges during its development process:**

Using RecyclerView in Fragment: Since there are some differences between Fragment and ordinary interfaces, such as not using the findViewById method directly, you need to use binding for binding, so using RecyclerView in Fragment requires some additional configuration and processing.

Loading pictures and videos in RecyclerView: Since RecyclerView is a scrollable list, if a large number of pictures and videos are loaded, it can cause memory overages or lag, so libraries such as Glide are needed to optimize the loading and caching of pictures and videos.

Display tables, lists, code blocks and other elements in the tutorial page: Since the tutorial page needs to show various types of information, such as appliances, materials, steps, etc., you need to use Markdown and other syntax to format the text, and use the corresponding controls or libraries to render Markdown content.

**Testing and user experience analysis**

**The following test methods were used in this project:**

To ensure the quality and stability of the application, we will conduct functional testing of the application on the third-party cloud platform WeTest. The test will cover the various functional modules, including the food list display of the main page, the content display of the baking tutorial page, the information display and editing of the personal page, and the normal operation of the registration function.

**The project uses the following user experience analysis methods:**

User survey: In the early stage of development, users' needs, preferences, pain points and other information for baking and learning apps are collected through questionnaires, interviews and observations, so as to conduct demand analysis and functional design.

User feedback: In the later stage of development, some target users are invited to participate in the trial of the software, and users' opinions, suggestions, evaluations and other information on the software are collected through questionnaires, interviews, evaluation and other methods, so as to improve and optimize.

User behavior analysis: After the release of the software, the behavior data in the process of using the software, such as visit times, stay time, click rate, logs, statistics, etc., and analyzed through visual tools, so as to understand users' preferences, habits, problems and other conditions.

**Conclusion**

This document summarizes the software design of the BakeMate Bake Learning app, including requirements analysis, overall design, user interface design, key technologies, testing, and user experience analysis.

BakeMate Baking learning app is a mobile app designed for people who want to learn to bake. It allows users to easily master the production methods and techniques of all kinds of baked goods, and provides a friendly and beautiful user interface and a smooth and stable user experience.

During development, we encountered technical challenges such as using RecyclerView in Fragment, loading pictures and videos in RecyclerView, and presenting elements of tables, lists, code blocks and more in the tutorial page. We consult information and study

Through the development of this project, we have learned a lot of extended knowledge, including the implementation of animation effects, the hidden display of passwords, and the application of Fragment, etc. At the same time, it strengthens the use of Recyclerview and the application of data transmission related knowledge. In the design and implementation process, we focus on the aesthetics and usability of user interfaces, and strive to provide a user-friendly interactive experience. However, there are also some challenges and difficulties encountered in the development process, such as the implementation of data transfer and registration functions. To address these challenges, we actively sought solutions, and finally successfully completed the design and development of the application.

In summary, through the description of this document, we detail the requirements specifications, overall design, user interface design, key technologies, testing and user experience analysis of BakeMate applications, and provide a summary and conclusion of the project. These contents will provide clear guidance and reference to the development team and relevant stakeholders, facilitate the smooth progress and successful delivery of the project, and provide a valuable reference for future improvements and solutions.