

# SMA Documentation

## 1. IntroductionWhat?

The project is a quiz application designed for Android that provides users with a fun and engaging way to test their knowledge across various topics. The app offers multiple-choice questions in a variety of categories and allows users to track their progress. A key feature of the app is the inclusion of a "50/50 lifeline" to aid users in answering difficult questions by eliminating two incorrect options. This feature aims to enhance user experience by offering more than just a trivia challenge—it introduces a strategic element that encourages users to keep playing.

### Why?

The motivation behind this app is to provide users with an interactive and educational experience. Many existing quiz apps offer standard multiple-choice questions but lack innovative features such as lifelines to assist users during gameplay. By combining a basic quiz format with a 50/50 lifeline, this app enhances the user experience, making quizzes more challenging and fun. Additionally, incorporating a scoring system allows users to track their performance, offering a sense of progression and accomplishment. This is especially useful for users who enjoy competitive learning, as they can measure their improvement over time.

Moreover, while the quiz market is competitive, many apps in this space either focus on multiplayer experiences or fail to offer a clean and simple user interface. This app stands out by targeting solo users and delivering a straightforward yet engaging gameplay experience. It is designed to be intuitive, requiring minimal setup, allowing users to jump right into the action without any distractions.

## 2. State of the Art

The mobile quiz market is highly competitive, with several established apps that offer similar features. Among these, **QuizUp** and **Trivia Crack** are two of the most popular. These apps serve as a benchmark for the development of my app.

Feature	QuizUp	Trivia Crack	SMA Quiz App
<b>Store Link</b>	<a href="#">QuizUp on Google Play</a>	<a href="#">Trivia Crack on Google Play</a>	Custom-built, in development
<b>Number of Ratings</b>	1M+	100M+	N/A
<b>User Interface</b>	Clean, minimalistic design	Fun, colorful UI	Simple and intuitive interface with lifeline feature
<b>Lifeline/Assistance</b>	No lifeline system	Power-ups available, but no 50/50 option	50/50 lifeline option to help with tough questions
<b>Question Categories</b>	Multiple categories (Science, History, etc.)	Wide variety of categories	Multiple categories like Science, History, Geography, etc.
<b>Score Tracking</b>	Yes	Yes	Yes, with the ability to save and track scores over time

#### Pros of QuizUp and Trivia Crack:

- Both apps offer engaging gameplay experiences, with multiple categories of questions.
- Trivia Crack is known for its colorful interface and interactive gameplay.
- QuizUp offers a clean UI that is easy to navigate, ensuring a smooth experience for users.

#### Cons:

- Neither app includes a dedicated lifeline feature like the 50/50 option, which can make the game feel static at times.
- Both apps feature extensive menus and options, which can overwhelm new users.
- Trivia Crack's UI is designed to be visually appealing, but some users may find it too bright and busy.

**Why choose my Quiz App?** Unlike QuizUp and Trivia Crack, this app's focus is on a single-player experience where users can challenge themselves with quizzes while having access to a lifeline when needed. The lifeline feature offers a more strategic way to engage with the questions, improving the overall gameplay experience. Additionally, the interface is designed to be simple, allowing for a smoother, less cluttered user experience.

### 3. Design and Implementation

#### How?

The system design follows a modular approach, with the application split into several key components:

- **QuizManager:** This component manages the lifecycle of each quiz, including saving and retrieving user scores.
- **QuizData:** A static data source that stores quiz questions and answers. The app allows for easy addition of new quizzes or categories, making it scalable.
- **MainActivity:** The main entry point of the app, where users can navigate between the quiz categories and view results.

#### Technologies and Libraries:

- **Kotlin:** The primary programming language used for Android app development. Kotlin is chosen due to its efficiency and compatibility with Android.
- **Jetpack Compose:** A modern UI toolkit that simplifies UI development by using Kotlin's declarative syntax. This allows for rapid UI creation and improved maintainability.
- **Room Database (Future Addition):** Although the current version of the app doesn't include a database, integrating Room for persistent storage of user scores could be an upgrade in the future.
- **Lifeline Feature Logic:** The core logic behind the 50/50 lifeline is handled in the QuizManager class. When the lifeline is activated, the app randomly eliminates two incorrect answers, leaving the user with a 50/50 chance of answering correctly.

**System Architecture:** The architecture follows a simple Model-View-Controller (MVC) pattern:

- The **Model** is represented by the QuizData class, which holds the quiz questions and answers.
- The **View** is the UI components managed by Jetpack Compose.
- The **Controller** is represented by the QuizManager and MainActivity, which handle the app logic, such as selecting quizzes, managing the quiz state, and displaying results.

## 4. System Usage

### Step-by-step Usage:

1. **Main Menu:** Upon opening the app, the user sees a list of available quizzes displayed as buttons. Each quiz has an associated title and a brief description.
2. **Select Quiz:** The user taps on a quiz, which brings them to a question screen.
3. **Answer Questions:** The user is presented with a question and four multiple-choice options. After selecting an answer, they are informed whether their choice was correct.
4. **Lifeline Feature:** When a user is unsure about an answer, they can tap the lifeline button to use the 50/50 feature. This eliminates two incorrect choices, leaving only two answers to choose from.
5. **End of Quiz:** Once all questions are answered, the user is shown their total score, with options to restart the quiz or return to the main menu.

### UI Elements:

- **Quiz List:** A vertical list of available quizzes displayed on the main screen, each quiz clickable for more information and gameplay.
- **Question Buttons:** Each question is accompanied by four buttons representing possible answers. These are styled to stand out and be easily clickable.
- **Lifeline Button:** Located below the question, users can click this button to activate the 50/50 feature, which is visually distinct from the answer buttons.
- **Result Screen:** After completing a quiz, the user is shown a summary of their performance, including the total score and options to start another quiz.

## 5. Conclusions

**Test Results and Performance:** The application performs well under standard conditions, with no noticeable lag or crashes. The quiz logic runs smoothly,

and the lifeline feature operates as expected. The app's design is responsive, scaling appropriately for different screen sizes.

**What was learned:** This project provided valuable insight into Android app development, particularly in managing UI elements with Jetpack Compose and handling dynamic

content. The development process also highlighted the importance of designing simple yet effective user interfaces that prioritize ease of use and functionality.

**Challenges:** One of the main challenges was implementing the lifeline feature in a way that didn't interrupt the quiz flow. Ensuring that the feature was intuitive and easy to use took several iterations of design and testing.

**What would I have desired?** A more advanced feature set, such as social sharing of results or multiplayer functionality, could take the app to the next level. Additionally, integrating user accounts for personalized experiences would have enhanced the app's long-term usability.