# How Knowledgeable Are You ?

Bachelor's Thesis

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## ABSTRACT

How knowledgeable are you is a mobile game application. In this game application, you can measure your own knowledge, play for fun in your spare time, play to learn new information. In the game, you are asked questions on the topic you choose and your score increases in line with the questions you know. You can use different one-right jokers for questions you do not know or have guesses. The game is an application that is very easy-to-use and provides competition , knowledge and entertainment to the all ages of user.

The use of phone games has increased considerably nowadays. People waste a lot of time these days. While waiting for something somewhere, using public transport on the road, during work breaks, when there is nothing to do at home, and in many other places. How knowledgeable are you here for them. It allows people to spend time without getting bored. It provides entertainment to people with its constantly different and new questions, questions on different subjects, and its point system, which intensifies the competition among people. Even if they have a job, they can take a break from the game and then continue.

The application has been developed for android devices and its very easy to use. You have to give yourself a nickname when you log in. Then you can start the game directly with the play game button and measure your own knowledge. And thanks to the leaderboard, you can compete between people and witness the competition between people. If you have a creative question that is not in the game, you can add the question to the game in the “give me a question” section.

**ACKNOWLEDGEMENTS**

I would like to express my deepest gratitude to my supervisor, Asst. Prof. Ahmet Feyzi Ateş , for his unwavering support throughout the development of this thesis and the project. His guidance and assistance were invaluable to me, as he helped me overcome every obstacle that I faced during the construction of this thesis and the project.

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# 1. INTRODUCTION

How knowledgeable are you is a mobile game application. In this game application, you can measure your own knowledge, play for fun in your spare time, play to learn new information. In the game, you are asked questions on the topic you choose and your score increases in line with the questions you know. You can use different one-right jokers for questions you do not know or have guesses. The game is an application that is very easy-to-use and provides competition , knowledge and entertainment to the user.

## 1.1. Purpose of the System

The use of phone games has increased considerably nowadays. People waste a lot of time these days. While waiting for something somewhere, using public transport on the road, during work breaks, when there is nothing to do at home, and in many other places. How knowledgeable are you here for them. It allows people to spend time without getting bored. It provides entertainment to people with its constantly different and new questions, questions on different subjects, and its point system, which intensifies the competition among people. Even if they have a job, they can take a break from the game and then continue.

## 1.2. Scope of the System

How knowledgeable are you is a game application made so that people can compete with themselves and with their friends and have a pleasant time. Our game aims to enable people to both develop their own culture and gain new information by using their knowledge. In addition, thanks to the interfaces used, the program has been designed to be used by people of all ages.And also aim to reach wide audience by releasing the game on the Android ( Google Play ) platform.

## 1.3. Objectives and Success Criteria of the Project

How knowledgeable are you's, its main purpose is to be a popular, fun and preferred information game application by people in a short time. I aim for users to enjoy and enjoy the game they play. It will be easily understood thanks to the user-friendly interface and the variety of questions. The application will be fast and precise and there will be no delays. My success

criterion is to successfully complete all the works that I have set as my goal, adhering to my schedule.

### 1.4. Definitions, Acronyms, and Abbreviations

HKAY : How Knowledgeable are you ?
App: Application
MVC: Model View Controller
AI: Artificial Intelligence
IDE: Integrated Development Environment
AndroidOS: Android Operating System
UI: User Interface

### 1.5. Organization of the Thesis Document

It emphasizes the special characteristics that distinguish it from comparable apps as well as the programming language utilized in its creation. Additionally, it gives a general review of the theoretical foundation and the libraries used in its development.

Functional and non-functional requirements, use case models, object models, software architecture, system decomposition, hardware-software mapping, persistence data management, access-control security, global software control, and boundary conditions are just a few of the components that make up the thesis document.

The project's technologies, frameworks, and libraries are covered in the section on implementation and tests, along with an overview of how the project's tests were carried out and the main pass/fail criteria.

The current state of the work is described in the Conclusion and Prospects section, and prospective new features for later development are suggested.

# 2. LITERATURE REVIEW

My project is to provide a unique knowledge game for players. It is aimed that they make the highest score they can with the usernames they set while logging in. Of course, they will be able to use the auxiliary elements provided by the game while making this high score. The game application is developed by using unity , php with C# Language. It is not a replacement of an existing system. Rather it is a unique game made from zero.

In comparison to similar systems , it has a few differences compared to other knowledge games. Such as ; QuizUp , Trivial Pursuit , Kahoot!

**Features that distinguish hkay from other games;**

In comparison to similar systems, "How Knowledgeable Are You?" (HKAY) has several advantages that set it apart from other knowledge games.

**Continuous Score Increment:** Unlike other games where each game is scored independently, HKAY allows players to increase their score continuously. This means that the more games a player plays and performs well in, the higher their overall score will be. This provides a sense of progression and encourages players to continue playing and improving their knowledge. HKAY focuses more on players' ability to answer quickly and accurately. Each question is given a certain amount of time and players who answer correctly get more points.

**Joker Rewards:** HKAY rewards players with jokers based on their knowledge and performance in the game. As players answer questions correctly and demonstrate their knowledge, they earn jokers. These jokers can be used strategically to gain advantages in the game, such as double answering, skipping a question, or getting hints. This adds an extra layer of gameplay and decision-making based on the player's accumulated knowledge.

**User-Generated Questions:** One unique feature of HKAY is the ability for players to add their own questions to the game. Unlike other knowledge games that solely rely on pre-determined question banks, HKAY allows players to contribute and expand the question pool. This fosters community engagement and ensures a diverse and ever-growing collection of questions.

**Developed with Unity:** HKAY is developed using Unity, a powerful and fast programming language commonly used for game development, including Android platforms. Unity provides a robust framework for creating interactive and visually appealing games, ensuring a smooth and engaging user experience for players.

These advantages make HKAY a dynamic and engaging knowledge game that promotes continuous learning, rewards knowledge, encourages community participation, and delivers a seamless gaming experience through its development with Unity.

In terms of libraries, my project uses different libraries available in unity itself. If we want to give an example from these libraries; We can give sprite , numeric , buttonUI , colortheme. Unity libraries offers a wide range of tools and interfaces for building game interface , including user interface layout and management.

# 3. PROPOSED SYSTEM

## 3.1. Proposed System Design

### *3.1.1. Overview*

Today, knowledge game applications have lost their creativity, all games ask the same question types and the same questions. People complain about answering the same questions and not seeing any change. How knowledgeable are you will enter the game application industry from a different direction. The questions in the given topics will be creative questions that are not found in any other game, apart from that, there will be different jokers than the classic wild card rights. Therefore, it will be a user-oriented game. Also this project creates a new mobile game environment. This environment allows people to interact with their friends using their knowledge.

### *3.1.2. Functional Requirements*

| Requirement ID | Requirement Statements | Use Case Names |
|---|---|---|
| **FR01** | As a user, I would like to join into the system so that I can start playing game.<br>**Acceptance Criteria:**<br>*User can choose their username.<br>*User can upload a profile picture.<br>*User can click the save button.<br>*User can see that he/she started game successfully. | Login |
| **FR02** | As an end user I would like to log out from my session in order to create a new nickname or new nickname for leaderboard.<br>**Acceptance Criteria:**<br>*Users can click the logout button.<br>*Users will be directed to the registration page if successfully logged out. | Logout |

| | | |
|---|---|---|
| **FR03** | As an end user I would like to delete my existing nickname.<br>**Acceptance Criteria:**<br>*Users can click the delete nickname button.<br>*Users are redirected to the home page if their nickname is successfully deleted. | DeleteNickname |
| **FR04** | As an end user, I would like to start game immediately.<br>**Acceptance Criteria:**<br>*****User should click the start button.<br>*Users should entered nickname.<br>*After clicking the start button user will pick genre of the questions then game will start. | StartGame |
| **FR05** | As an end user, I would like to change audio and theme settings.<br>**Acceptance Criteria:**<br>*Users should click the settings button. | Settings |
| **FR06** | As an end user I would like to check people points and leaderboard.<br>**Acceptance Criteria:**<br>*Users should click the leaderboard button. | Leaderboard |
| **FR07** | As an end user I would like answer the question.<br>**Acceptance Criteria:**<br>* The game must have started and the genre of question he/she wanted came.<br>*User should clicks the button of the selected answer. | SelectAnswer |
| **FR8** | As an end user I would like to use my 50/50 joker.<br>**Acceptance Criteria:**<br>*****User must be facing the question in the game.<br>* Users should click the jokers button. | Use Joker 1<br><br>(50/50) |

| | | |
|---|---|---|
| | * Then user should click the 50/50 button. | |
| **FR9** | As an end user I would like to use my phone to a friend joker.<br>**Acceptance Criteria:**<br>*****User must be facing the question in the game.<br>*Users should click the jokers button.<br>*Then user should click the give me the answer button. | Use Joker 2<br>( Give me the answer ) |
| **FR10** | As an end user I would like to use my 25/25 joker.<br>**Acceptance Criteria:**<br>*****User must be facing the question in the game.<br>* Users should click the 25 button. | Use Joker 3<br>( 25/25 ) |
| **FR11** | As an end user I would like to use my pass joker.<br>**Acceptance Criteria:**<br>***** User must be facing the question in the game.<br>* Users should click the PASS button. | Use Joker 4<br>( Pass ) |
| **FR12** | As an end user I would like to use my 2X joker.<br>**Acceptance Criteria:**<br>***** User must be facing the question in the game.<br>* Users should click the 2X button. | Use Joker 5<br>( 2x ) |

| | | |
|---|---|---|
| **FR13** | As an end user I would like to see my score.<br>**Acceptance Criteria:**<br>*User must have started the game.<br>*User should click the button Display Score. | DisplayScore |
| **FR14** | As a user I would like to stop the game.<br>**Acceptance Criteria:**<br>*User must have started the game.<br>*The user should press the stop button on the top right of the game interface. | StopGame |
| **FR15** | As a user I would like to quit from game.<br>**Acceptance Criteria:**<br>*User should click quit game button.<br>*If user in game , first press the stop button on the top right of the game interface then click on the quit game button. | QuitGame |
| **FR16** | As a user I would like to restart game.<br>**Acceptance Criteria:**<br>* User must have started the game.<br>*The user should press the stop button on the top right of the game interface.<br>*User should click on restart game button. | RestartGame |
| **FR17** | As a user I would like to return main menu.<br>**Acceptance Criteria:**<br>* The user should press the stop button on the top right of the game interface.<br>*User should click the back to main menu button. | BackToMainMenu |
| **FR18** | As a user I would like to give question to game.<br>**Acceptance Criteria:**<br>*Users should click on the givemequestion button.<br>*User should fill the required parts. | GiveMeQuestion |

| | | |
|---|---|---|
| | *User should be able to add question by clicking add button. | |

### *3.1.3. Nonfunctional Requirements*

#### *3.1.3.1 Usability*

- Users of my program should be able to use all the game's features with ease because of its straightforward, user-friendly design.

#### *3.1.3.2 Reliability*

- My system keeps private user information on the database, I will use authentication system for nicknames and their personal information.

#### 3.1.3.3 Performance

- In my design, I proposed users to complete actions in 3-5 seconds. System using the Unity platform with C# so that we can maximize the performance.

#### 3.1.3.4 Supportability

- I designed the How Knowledgeable are you to be able to update to add new functionalities if any changes are required.

#### *3.1.3.5 Implementation*

- I am implementing my project as an mobile application, I use MySQL as database , Unity , C# as my coding language and Visual Studio for IDE.

#### *3.1.3.6 Interface*

- Users must enter nickname to access the application.
- Users who log into the game with a nickname can use every feature of the application and start the game whenever they want.

#### 3.1.3.7 Packaging

- My project is an android application where users can download to their device via the Google Play Store.

#### 3.1.3.8 Legal

- All contents mentioned in the project are protected by copyright law.
- How knowledgeable are you is available for the all type of users.

#### *3.1.3.9 Other Constraints*

- My project creates a new mobile game environment. This environment allows people to interact with their friends using their knowledge.
- The use of How knowledgeable are you may incur costs for the user. Although all members can play the game for free, sometimes people who want to use extra jokers in the game may pay a fee.

### *3.1.4 Use Case Model*

This model shows the user types and which properties that they can access. As it is shown in the figure, there are one type of users. Visitors can only use the system to set nickname.

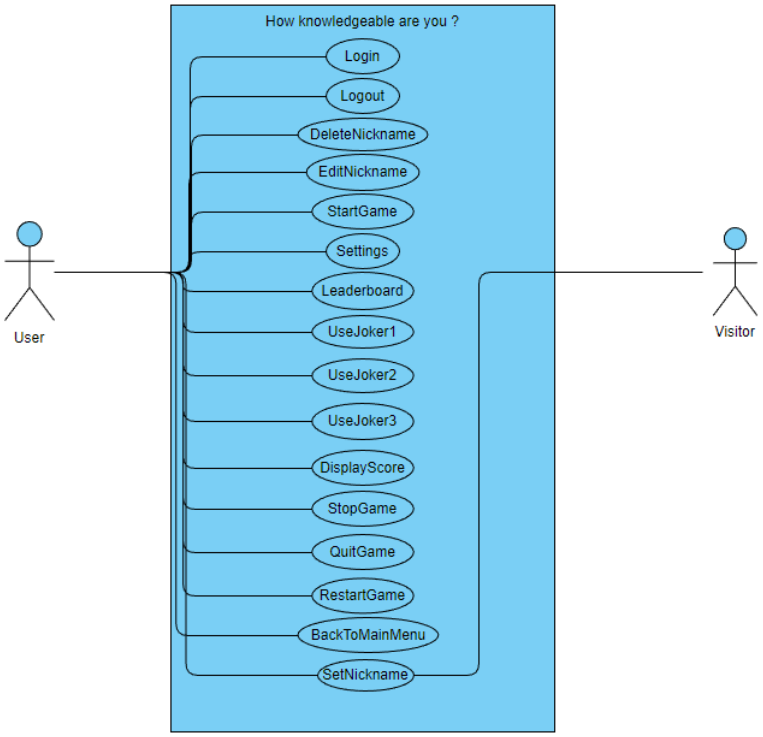



**Figure 3.1: Use Case Model**

### *3.1.5 Object Model*

This model shows the classes, which is the basic structure of the system. In this system, we have three main classes. In the User class, there are user information and functions that the user

will use. User class has only one sub-class, which have their own functions. Visitor class can access the User class just with setting nickname function. In the user class, all the features that a player can do and use are visible.

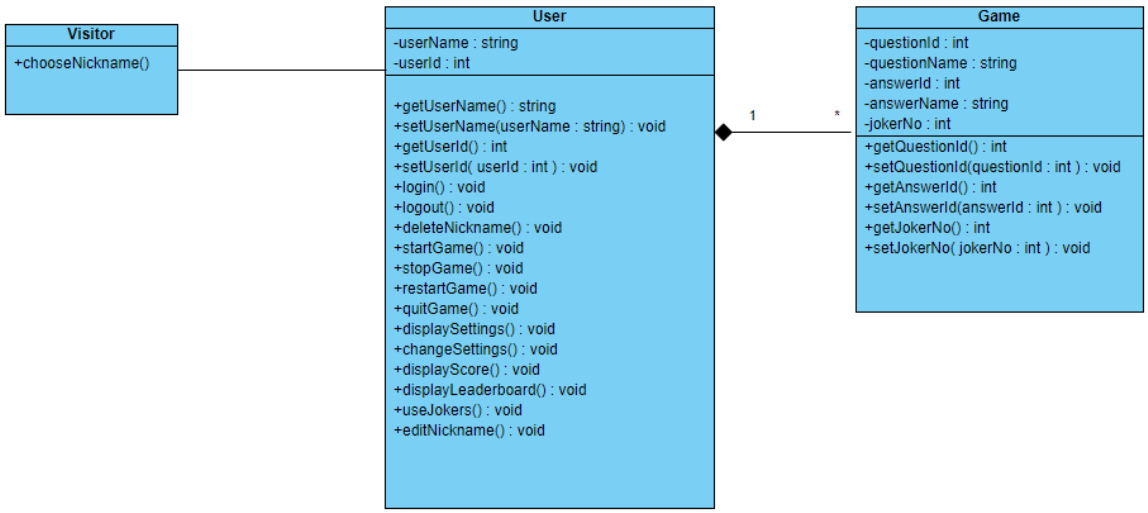



**Figure 3.2: Object Model**

### *3.1.6 Design Goals*

**Performance**

Responses to requests are given between one and six seconds after they are accepted.

System has a minutely capacity of ten tasks.

1 Gigabytes of memory are used by the system.

System should control internet connection every 5 sec.

**Dependability**

When a user submits incorrect data, the system displays errors.

To ensure that the system is bug-free, unit testing is used.

System can achieve common tasks below 30 seconds.

**Cost**

The cost of developing a system is free. Every part of system was created using open-source programs like Unity and MySQL Firebase.

Deployment cost for the system is free. It is available for free download from the Android Google Play Store.

**Maintenance**

The system created by using the MVC Architecture , making modifications simple and error-free.

Considering that the system was created for Android Devices so adaptation is simple.

Since my deployment target is Android , my application can use by only android or in windows with emulator. But it is not available for other environments such as Ios and Windows itself.

CamelsCase is the format used for system design and coding. Codes also include remark explanations. Because the system is programmed in the C# IDE with Unity, it is simple to map the code of the specific requirements.

**End User Criteria**

The system is easy to use for users. The user interface has explanations and the buttons are easy to access. The system's font has been adjusted for easy readability. The questions in the system are arranged in a way that everyone can understand.

## 3.2 Proposed Software Architecture

### *3.2.1 Overview*

The Unity Framework was utilized to develop this system, which Android considers to be a highly efficient and groundbreaking approach. The user interface (UI) is constructed using Unity UI and C# scripts. MySQL is employed as the database, with communication between the database and the system facilitated through HTTP requests. As the system is an Android mobile game application, it follows the MVC (Model-View-Controller) pattern as its architecture. This pattern consists of three primary layers. The View layer encompasses the UI, the Controller layer contains the main functions, and the Model layer is responsible for data storage.

### *3.2.2 System Decomposition*

A typical software design paradigm for implementing user interfaces, data, and controlling logic is MVC (Model-View-Controller). It emphasizes a division between the business logic and appearance of the software. This "separation of concerns" allows for a better labor-force distribution and better upkeep.

**The Model** is the area where the data to be used in the developed project is kept. Model, in short, is the modeling of concrete objects that we use in our daily life in the software industry.

**The View** is what user can see on data. The view is aware of how to obtain model data, but it is unaware of the meaning of that data or how a user might be able to alter it.

**The Controller** provides coordination between Model and View in the game application. It is the control section where all operations (various calculations, data exchange, database operations, etc.) in the developed projects are made.

On my system the user selects an action from the UI in the View layer. The selected action that calls the interfaces for the selected action is sent to the Controller layer. The Controller layer updates the Model layer via interfaces. The Model layer notifies the Controller layer whether the update was successful or not. If the update is successful, the Controller layer updates the view shown to the user via the UI.

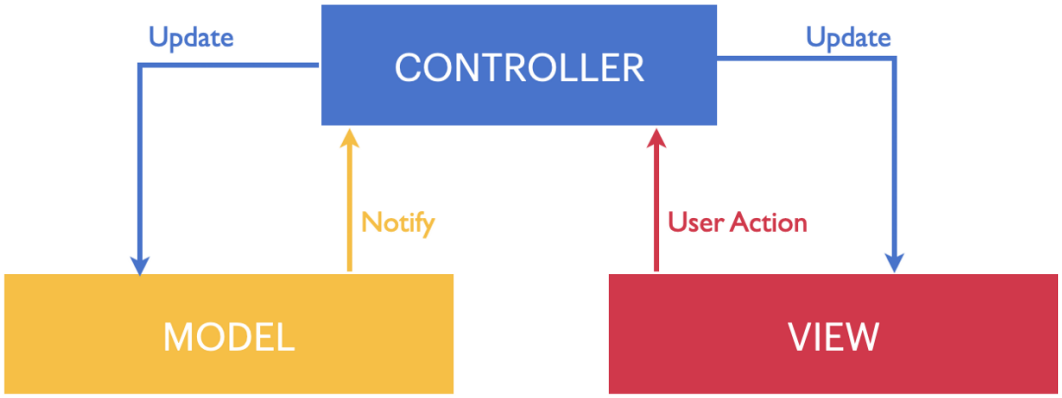


**Figure 3.3: Model View Controller Schema**

The MVC model has three subsystems. Model, View, and Controller are them.

The Model part consists of two components. And they are Settings and Player Models. Settings Model holds Settings data and Player Model holds Player's data. The Model part communicates controller with Settings and Player Manager.

The Controller part consists of six components. They are Login, Profile, Game, Leaderboard, Settings Controller. Login, Game and Settings Controller connected with Player Manager to reach Player Model.

Settings , Main and Leaderboard Controller connected with Settings Manager to reach Settings Model. Login Controller updates Login View with loginViaNickname. Game Controller updates gameQuestion , pickGenre , selectAnswer , stopGame , quitGame , restartGame , useJokers. Main Controller updates Main View with leaderboard , settings and playGame. Controller updates profile view with profile.

User Interface is a part of the View portion. Six additional components make up this component. Login, Leaderboard, Profile, Game, and Settings View are the options. These are the views of the application itself, How Knowledgeable Are You? The View Layer allows the application to receive user input.

### *3.2.3 Persistent Data Management*

Persistent data management refers to the storage and retrieval of data that persists beyond the lifetime of a game session or application. In the case of a Unity game that uses MySQL and PHP, the game need to store information such as player profiles, game progress, or in-game purchases. Using MySQL and PHP for persistent data management in a Unity game can provide a scalable and reliable way to store and retrieve game data.

There are various advantages of MySQL database, such as;

Scalability : Can handle large datasets , scalable to meet the needs of growing applications.

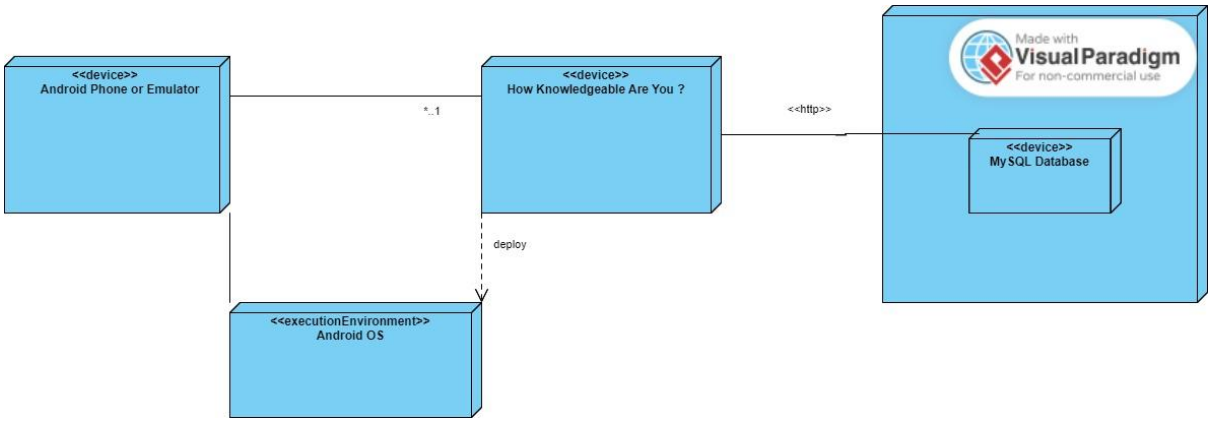
Speed : Fast performance , can handle high speed transactions

Flexibility : Can be used in various environments

Reliability : Can ensure data integrity and availability.

Cost-Effective: Its free to use so I don't need any money to deployment.

In our system every static data will be stored in the database.



The following figure shows the relational database schema of the system :

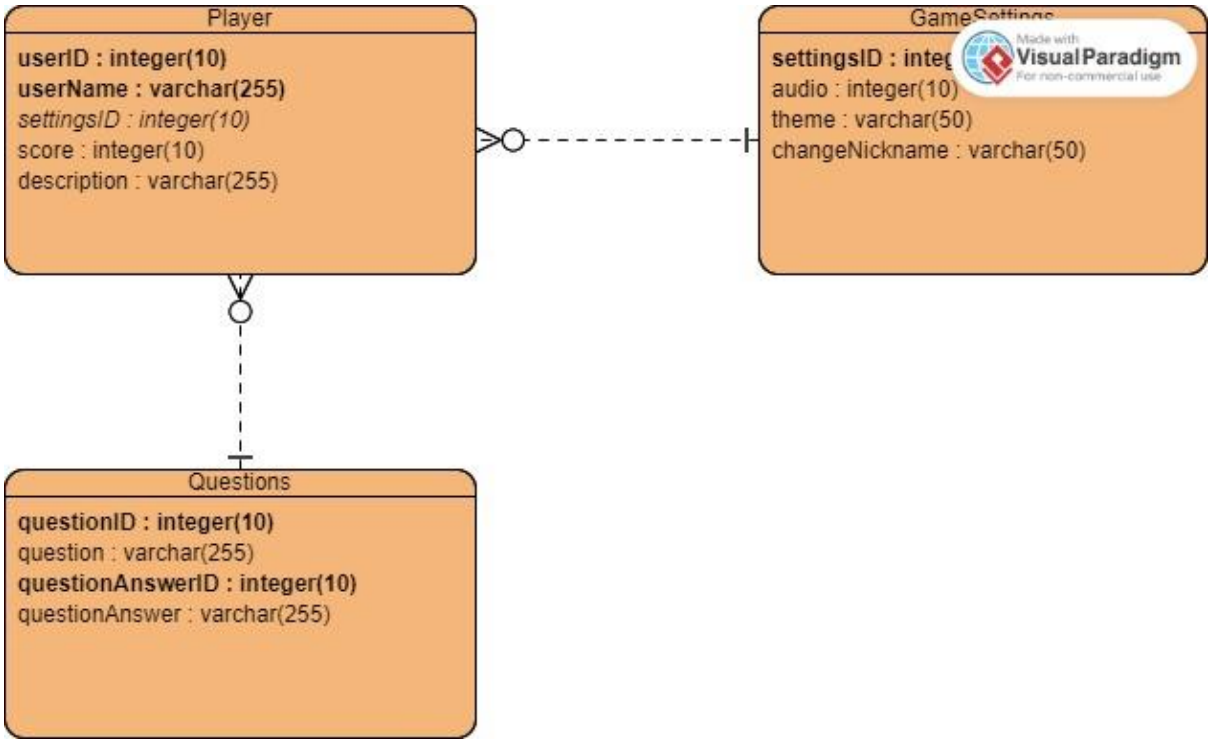



**Figure 3.6: Entity Relationship Diagram**

### *3.2.4 Boundary Conditions*

**Initialization:**

How Knowledgeable Are You ? is an android mobile application. It needs to be downloaded and installed from the Android Store on an Android running device. An internet connection is required for the download.

An internet connection is also necessary to use the application. To access the program, users must give it a nickname; otherwise, they will be unable to.

The user will be sent to the home page and given full access after logging in.

**Termination:**

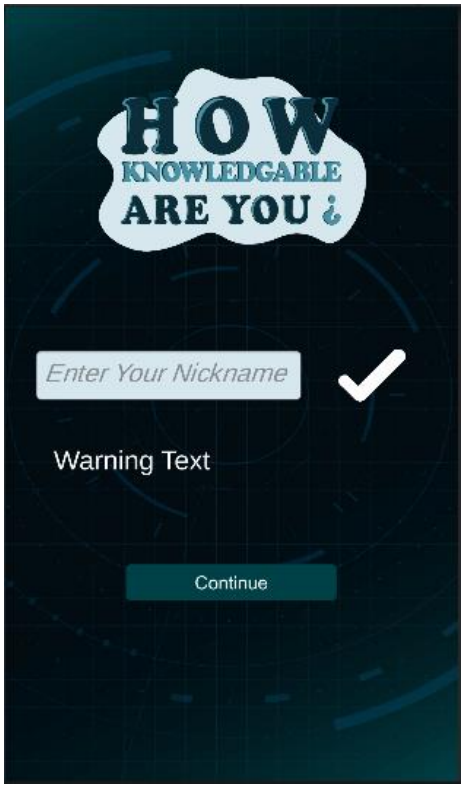
Users can delete their accounts and quit games using buttons on the settings page of the application. Use the "Change Nickname" button if the user wants to alter their nickname.

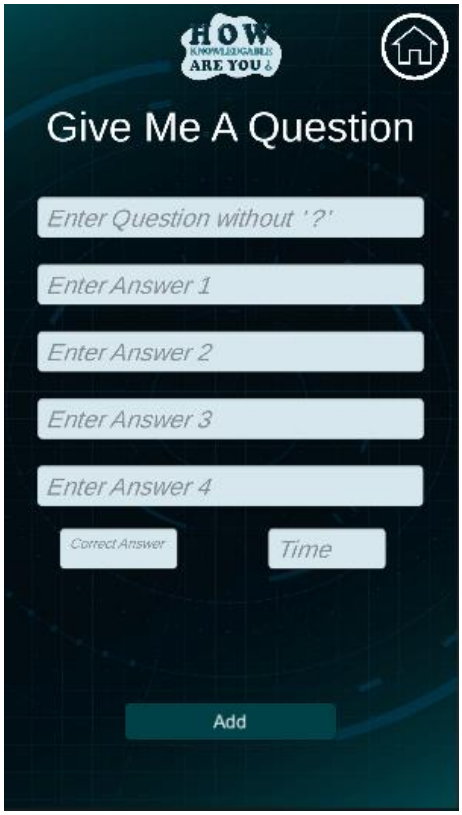
If the user wants to stay signed in but wants to close the application, they will simply exit to the main page of their device and they can terminate the app running session.

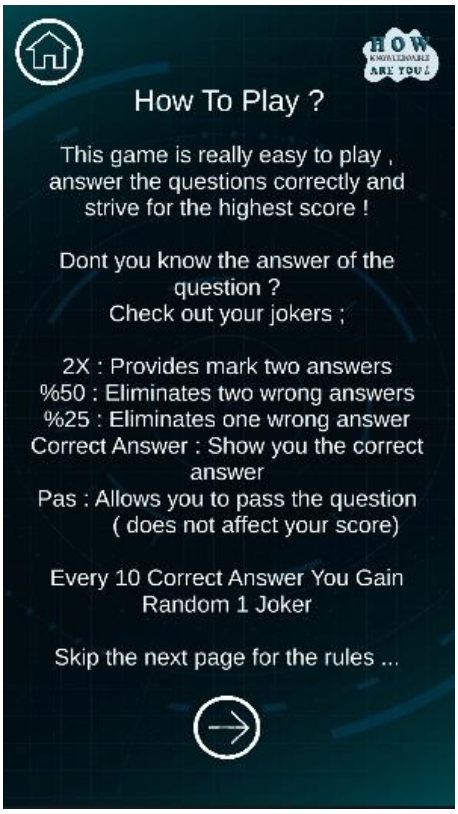
**Failure:**

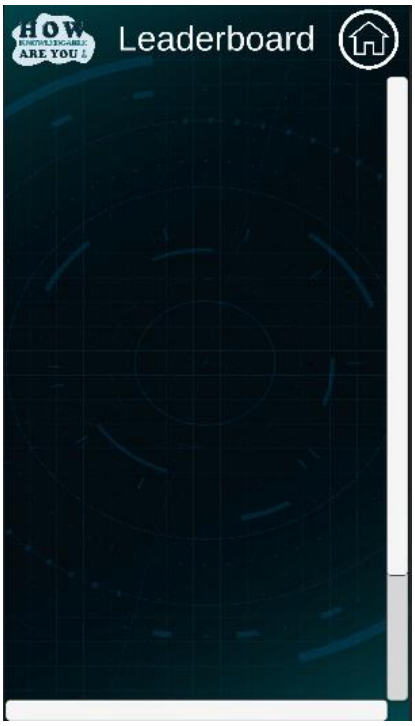
If there are any crashes or issues, a pop-up message will appear for the user. If the connection between MySQL and the system is broken, the user will be informed, asked to restart the application, and their session will be terminated. The system makes an effort to fix the problem on its own. If the program crashes, the user will need to restart the session.

### *3.2.5 Graphical User Interface*

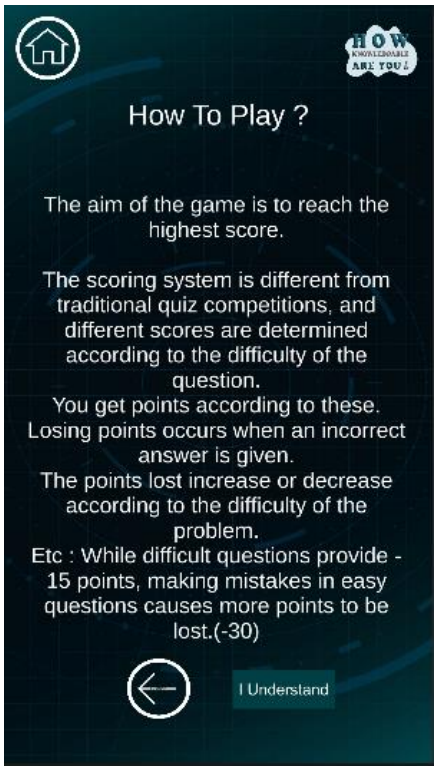





HOW KNOWLEDGABLE ARE YOU
Leaderboard

HOW KNOWLEDGABLE ARE YOU
1500
En büyük futbol takımı kimdir ? - Beşiktaş
%25
%50
2X
PAS
Correct Answer
Button
Button
Button
Button


HOW KNOWLEDGABLE ARE YOU
How To Play ?
The aim of the game is to reach the highest score.
The scoring system is different from traditional quiz competitions, and different scores are determined according to the difficulty of the question.
You get points according to these.
Losing points occurs when an incorrect answer is given.
The points lost increase or decrease according to the difficulty of the problem.
Etc : While difficult questions provide -15 points, making mistakes in easy questions causes more points to be lost.(-30)
I Understand

### *3.2.6 Adding Data to Database with Bulking*

1. First, the csv file is set in accordance with the database. ( Question , answerA , answerB , AnswerC , AnswerD , correctAnswer , seconds)

2. The database opens using phpMyAdmin ( XAMPP ).

3. By using ‘LOAD DATA INFILE’ statement , CSV file import into a MySQL table.

4. Then with the SQL command to import them into table.

```
LOAD DATA INFILE '/path/to/file.csv'
INTO TABLE your_table
FIELDS TERMINATED BY ','
ENCLOSED BY '"'
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;
```

**Code Explanation**

LOAD DATA INFILE: The command to load data from a file.
'/path/to/file.csv': The path to the CSV file.
INTO TABLE your_table: The target table in the MySQL database.
FIELDS TERMINATED BY ',': Specifies the character used to separate fields in the CSV.
ENCLOSED BY '"': Specifies the character used to enclose field values in the CSV file.
LINES TERMINATED BY '\n': Specifies the line termination character in the CSV file.
IGNORE 1 ROWS: Instructs MySQL to ignore the first row (header) of the CSV file.

# 4 IMPLEMENTATION AND TESTS

## 4.2 Implementation

For my implementation of the game application , first started by making the interface for my first page in unity. Since there will be a registration screen after that, I continued with connecting the database. In this way, I established the connection between my game and the database. Database will store nickname, score, question, question answers, correct answers and the duration of the questions. This allows me real-time data syncing , fast , reliable data management and very ease of scalability.

Next , designed the main menu. I used unity UI library in this menu. This menu was the main skeleton of my game. Players would start the game, add questions, look at the ranking and exit the game from here.

I have tried to design a simple yet flashy interface for the user interface whenever possible. In the game interface, the questions for the players can be read easily, which jokers are used can be noticed, they can easily understand how much time is left.

I also implemented , I needed to add an internet control mechanism for adding questions to the game. I used http request for this and checked with php. After providing the control, I made the question given by the player directly added to the game.

I conducted comprehensive testing on the application to ensure its proper functionality and eliminate any bugs. Following that, I proceeded to deploy the application to the Android store, making it available for users to download and utilize. I validated the app according to the Android guidelines and performed testing on various devices to ensure compatibility.

## 4.3 Test Cases

### *4.3.1 Select Nickname*

**Participating Actors:** Initiated by User

**Flow of Events:**

1. Visitor user downloads the game application.
2. Visitor opens the game application.
3. The visitor is first greeted with the login page.
4. Visitor clicks the choose nickname input field.
5. User enters a unique nickname.

**Entry condition:** User clicks select nickname button.

**Exit condition:** Registered User logs into his/her account in How knowledgeable are you? and goes to the game section from the menu.

**Quality requirements:**

How knowledgeable are you?' must successfully authenticate users via their unique nickname.

### *4.3.2 Start Game*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User goes to main menu.
2. User clicks on play game button.
3. User clicks next button on how to play page.
4. User clicks I understand button on how to play 2 page.
5. Game starts.

**Entry condition**

User must logged in and on main menu.

**Exit condition**

User click I understand button.

**Quality requirements**

All buttons must respond to the user in 0.1 milisecond.

### *4.3.3 Leaderboard*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User goes to main menu.
2. User clicks the Leaderboard button.

**Entry condition**
User clicks the leaderboard button which is on the main page.

**Exit condition**

Users clicks back button and gets redirected to their main page.

**Quality requirements**

The application presents a table where the user can see the score they made in the game.

How knowledgeable are you must respond to the user within 5 seconds.

### *4.3.4 GiveMeQuestion*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User goes to main menu.
2. User clicks on the GiveMeQuestion button.
3. User must fill the required input fields.
4. User must click on the add button.

**Entry condition**

User must logged in.

**Exit condition**

User clicks add button.

**Quality requirements**

How knowledgeable Are You must respond to the user within 2 seconds.

### *4.3.5 StopGame*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User click the double quote button on right top corner during the game for stopGame.

**Entry condition:** User must started the game.

**Exit condition:** User clicks on the continue game button.

**Quality requirements**

He/she can pause the game at any time.

Since the return time of the button is very fast , it does not waste in the game.

### *4.3.6 RestartGame*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User click the double quote button on right top corner during the game for stopGame.
2. Then user clicks the restartGame button for restarting game.
3. Or after game over user clicks the restartGame button for restarting game.

**Entry condition:** User must started the game.

**Exit condition:** User clicks on button and gets redirected to their profile.

**Quality requirements**

HKAY must respond to the user within 0.5 seconds.

He/she can restart the game at any time.

### *4.3.7 QuitGame*

**Participating Actors:** Initiated by Visitor

**Flow of Events**

1. User click the double quote button on right top corner during the game for stopGame.
2. Then user clicks the QuitGame button for quitting game.
3. Accepts the system message for quitting game.
4. If user in main menu click the quitGame button for quitting game.

**Entry condition:** User must using mobile game.

**Exit condition:** User must click the quitGame button.

**Quality requirements**

User clicks on the quitGame button.

User must accept the warning message.

### *4.3.8 DisplayScore*

**Participating Actors:** Initiated by User
**Flow of Events**

1. User click the box on the upper left corner of the game screen.

**Entry condition:** User must started the game.

**Exit condition:** User clicks anywhere else but box.

### *4.3.9 UseJoker*

**Participating Actors:** Initiated by User

**Flow of Events**

1. User clicks the joker button on the bottom right corner.
2. User selects specific joker to use.
3. User answers the question using his joker.

**Entry condition**

User must started the game.

**Exit condition**

User selects specific joker.

**Quality requirements**

User presented with useful jokers that can help in the game.

# 5 CONCLUSIONS AND FUTURE WORK

In conclusion, HKAY is a unique mobile game where people can have fun, measure their own knowledge level and compete with other people based on time. Compared to other games, players are also allowed to contribute to their own game system, so players can add questions to the game. The mobile game application provides a user-friendly experience.

One of the strongest aspects of this application is that it offers a unique gaming experience. It offers an experience where they can progress by constantly knowing questions without the limit of questions and wildcards. Apart from that, there are all kinds of various questions. That's why it stands out from other knowledge games.

However, there are also areas for improvement and future development. Different question competition styles can be added by dividing the question types. In this way, people can compete in whichever division they want to compete in. A simultaneous competition can be held online. Competitiveness can be achieved by asking the same questions to two players at the same time. Apart from that, since the user interface is very flexible, it can be developed with many different variations.

Overall, this mobile game has given a chance to those who want to test their knowledge and compete with its unique and personalized questions. Therefore, it has the potential to take a popular place among such games. The future of this app looks promising with many opportunities for people to compete and learn knowledge.

# 6 REFERENCES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