

QuizBeerain: An Interactive Quiz System Facilitated by Game Host for Participants Engagement



IT 302 - Information Management

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System Background

General Objectives

To develop an interactive quiz system called QuizBeerain, enabling game hosts or admins to create, manage, and administer quizzes efficiently. The platform also offers participants an engaging experience for taking quizzes.

Specific Objectives

Develop a user-friendly interface for game hosts to create quizzes. It should support various question types, including multiple-choice and true/false.

Build the system to handle a large number of users simultaneously. Ensure it operates without performance degradation.

Implement a ranking system to rank students based on their quiz scores and performance. This will foster a sense of competition and motivation.

Scope

This project is to develop QuizBeerain, an interactive quiz system designed to enhance competitive gaming experiences. It will offer game hosts or administrators an intuitive interface for swiftly creating, organizing, and distributing quizzes. The system will efficiently manage a large number of users and support various question types, such as multiple-choice and true/false, with a strong emphasis on competition. A ranking system will be integrated to assess and motivate participants based on their quiz scores, fostering a competitive spirit. The platform will prioritize ease of use and engagement for both participants and administrators, ensuring a dynamic and interactive experience.

Delimitation

The delimitation of this project focuses on developing QuizBeerain as a competition-oriented quiz system, limited to supporting competitive formats like multiple-choice and true/false questions. It will not include other educational tools or advanced assessment methods. The project will prioritize fostering competition and motivation through features such as ranking and scoring, but will not extend to integrating with external platforms or providing in-depth analytics. The system will be designed to handle a high volume of users efficiently, emphasizing user engagement and ease of use for both game hosts and participants.

System Design

Prioritization Matrix

| Requirement | Importance | Cost | Risk | Priority |
|--|------------|--------|--------|----------|
| Functional Requirements | | | | |
| Logging in is simple. | High | Low | Low | High |
| Registering an account is easy. | High | Low | Low | High |
| Viewing quiz results is easy. | Medium | Medium | Medium | Medium |
| Checking your ranking after a quiz is easy. | Medium | Medium | Medium | Medium |
| Finding the quiz you need is easy. | High | Low | Low | High |
| Sharing feedback with the admin is easy. | Medium | Low | Low | Medium |
| Admin can view registered users. | High | Low | Low | High |
| Admin can remove registered users. | Medium | Low | Medium | Medium |
| Admin can view rankings after quiz completion. | High | Low | Low | High |
| Admin can manage and delete user feedback. | Medium | Medium | Medium | Medium |
| Admin can create quiz questions. | High | Medium | Low | High |
| Admin can set a timer for questions. | High | Medium | Low | High |
| Admin sets scores for correct answers. | High | Low | Low | High |
| Admin assigns penalties for incorrect answers. | Medium | Medium | Medium | Medium |
| Admin determines the number of questions per quiz. | High | Low | Low | High |
| Admin can delete created quizzes. | Medium | Low | Medium | Medium |
| Admin can enable or disable quizzes. | Medium | Low | Medium | Medium |

Analysis

High Priority Features

These are essential for the core functionality and user experience, and they should be developed first. Focus on core functionalities like quiz accessibility, user and quiz management, and scoring mechanisms. These are essential for the basic operation and user satisfaction of the quiz system.

- Finding the quiz you need is easy.

- Admin can view registered users.
- Admin can view rankings after quiz completion.
- Admin can create quiz questions.
- Admin can set a timer for questions.
- Admin sets scores for correct answers.
- Admin determines the number of questions per quiz.

Medium Priority Features

These features enhance the system but are not immediately critical. They should be addressed after the top priority features are implemented. While useful, these features are not critical to the initial operation of the system. They enhance the user experience and system management but can be developed after the core functionalities are in place.

- Sharing feedback with the admin is easy.
- Admin can remove registered users.
- Admin can manage and delete user feedback.
- Admin assigns penalties for incorrect answers.
- Admin can delete created quizzes.
- Admin can enable or disable quizzes.

| Requirement | Importance | Cost | Risk | Priority |
|--|------------|--------|--------|----------|
| Non Functional Requirements | | | | |
| The system is responsive for a quiz game | High | High | Medium | High |
| The quiz game is easy to navigate | High | Medium | Low | High |
| Clear instructions make it easy to understand. | High | Low | Low | High |
| The system is well designed | High | High | Medium | High |

Analysis

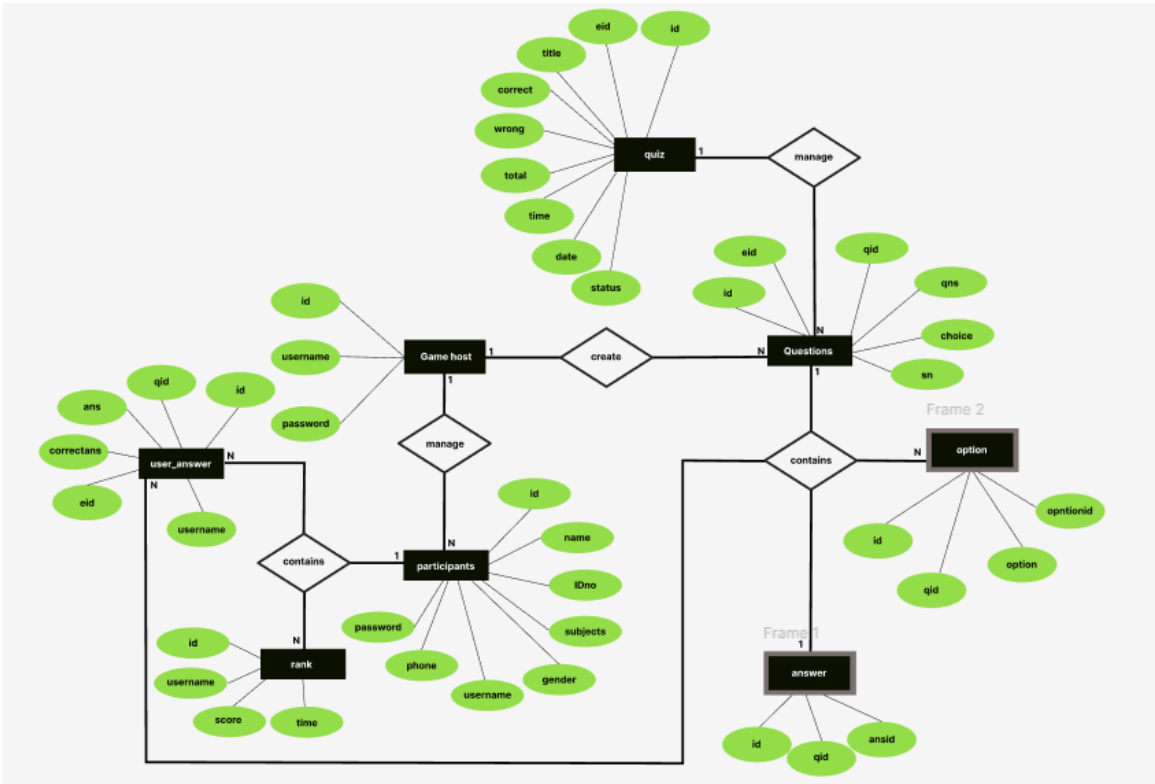
High Priority

All the features listed are considered High Priority because they are essential to delivering a high-quality quiz game experience. Each feature directly impacts the usability, performance, and overall user satisfaction, which are crucial for the success of the system. These features should be prioritized during development to ensure a smooth, intuitive, and satisfying user experience.

- The system is responsive for a quiz game.
- The quiz game is easy to navigate.

- The quiz game is easy to understand because of general instructions.
- The system is well designed.

ER Diagram



Data Dictionary

Table: quiz

| Field Name | Data Type | Description |
|------------|--------------|---|
| id | INT | Unique identifier for the quiz. |
| eid | TEXT | External identifier for the quiz. |
| title | VARCHAR(100) | Title of the quiz. |
| correct | INT | Number of correct answers required. |
| wrong | INT | Number of wrong answers allowed. |
| total | INT | Total number of questions in the quiz. |
| time | BIGINT | Time allocated for the quiz (in minute). |
| date | TIMESTAMP | Date and time when the quiz was created. |
| status | VARCHAR(10) | Current status of the quiz (enabled, disabled). |

Table: questions

| Field Name | Data Type | Description |
|------------|-----------|---------------------------------|
| id | INT | Unique identifier for the quiz. |

| | | |
|--------|------|---|
| eid | TEXT | External identifier for the quiz the question belongs to. |
| qid | TEXT | Question identifier. |
| qns | TEXT | The actual question text. |
| choice | INT | Number of choices available for the question. |
| sn | INT | Serial number or order of the question within the quiz. |

Table: options

| Field Name | Data Type | Description |
|------------|---------------|--|
| id | INT | Unique identifier for the option. |
| qid | VARCHAR(50) | Identifier of the question this option belongs to. |
| option | VARCHAR(5000) | The text of the option. |
| optionid | TEXT | Unique identifier for the option. |

Table: answer

| Field Name | Data Type | Description |
|------------|-----------|--|
| id | INT | Unique identifier for the answer. |
| qid | TEXT | Identifier of the question this answer is associated with. |
| ansid | TEXT | Identifier of the selected answer option. |

Table: participants

| Field Name | Data Type | Description |
|------------|-------------|---|
| id | INT | Unique identifier for the participant. |
| name | VARCHAR(50) | Name of the participant. |
| IDno | VARCHAR(20) | ID number of the participant. |
| subjects | VARCHAR(20) | Subjects of the participant. |
| gender | VARCHAR(5) | Gender of the participant. |
| username | VARCHAR(50) | Username of the participant. |
| phone | BIGINT(20) | Phone number of the participant. |
| password | VARCHAR(50) | Password for the participant's account. |

Table: rank

| Field Name | Data Type | Description |
|------------|-------------|--|
| id | INT | Unique identifier for the rank record. |
| username | VARCHAR(50) | Username of the participant. |
| score | INT | Score obtained by the participant. |
| time | TIMESTAMP | Timestamp when the score was recorded. |

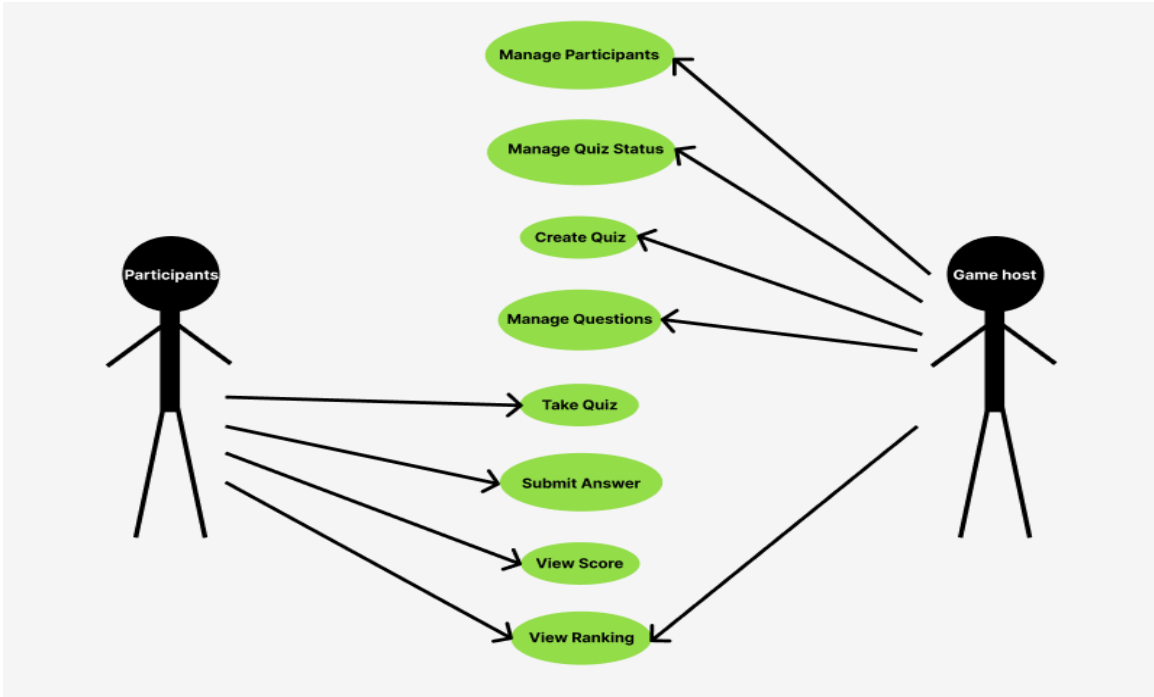
Table: user_answer

| Field Name | Data Type | Description |
|------------|-------------|--|
| id | INT | Unique identifier for the user's answer. |
| qid | VARCHAR(50) | Identifier of the question. |
| ans | VARCHAR(50) | User's selected answer. |
| correctans | VARCHAR(50) | Correct answer for the question. |
| eid | VARCHAR(50) | External identifier of the quiz the question belongs to. |
| username | VARCHAR(50) | Username of the participant who answered. |

Table: game host

| Field Name | Data Type | Description |
|------------|--------------|----------------------------------|
| id | INT | Unique identifier for the admin. |
| username | VARCHAR(50) | Admin username. |
| password | VARCHAR(500) | Admin password. |

Use Case Diagram



Description

| ID | 01 | 02 | 03 | 04 |
|-----------------|--|--|---|--|
| Use Case | Manage Participants | Manage Quiz status | Create Quiz | Manage Questions |
| Actors | Game Host | Game Host | Game Host | Game Host |
| Goal | To manage participant details (add, delete). | To enable or disable a quiz. | To create a new quiz for participants. | To add or delete questions for the quiz. |
| Preconditions | Game host must be logged in and have access to participants. | The quiz must be created and managed by the game host. | The Game host must be logged in. | A quiz must be created. |
| Post Conditions | Participant details are updated or managed accordingly. | Quiz status is updated (enabled or disabled). | A new quiz is created and stored in the system. | Questions are updated as required. |
| Basic Flow | 1. Game host logs in. | 1. Game host logs in. | 1. Game host logs in. 2. Select "Create quiz". | 1. Game host logs in. |

| | | | | |
|-------------------------|--|---|--|---|
| | 2. Selects “Manage Participants”. 3. Add and delete participants. 4. Save changes. | 2. Selects “Manage Quiz Status”. 3. Toggle quiz status. 4. Saves changes. | 3. Inputs quiz details. 4. Save the quiz. | 2. Selects a quiz. 3. add/delete questions. 4. Save changes. |
| Alternative Flow | 1. Management process is canceled. 2. Game host does not have necessary permissions. | 1. Status change is canceled. 2. Game host tries to changes the status of the quiz they don’t own. | 1. Quiz creation is canceled. 2. Incomplete information prompts to retry. | 1. Editing is canceled. 2. System prompts for missing details if not all fields are completed. |
| Exception | 1. Network issues prevent changes. 2. System error causes failure to save changes. | 1. Network issues prevent changes. 2. System errors causes failure to save changes. | 1. Network issues prevent quiz creation. 2. System error causes failure to save the quiz. | 1. Network issues prevent changes. 2. System error causes failure to save changes. |

| | | | | |
|-----------------|---------------------------------------|------------------------------------|--|-----------------------------|
| ID | 05 | 06 | 07 | 08 |
| Use Case | Take quiz | Submit answer | View score | View ranking |
| Actors | Participants | Participants | Participants | Participants |
| Goal | To take a quiz assigned by game host. | To submit answer to quiz questions | To view the quiz results after the participants finish quiz. | To view their ranking after |

| | | | | |
|-------------------------|---|---|---|--|
| | | | | completing the quiz. |
| Preconditions | Participants must be logged in and take the quiz that game host created. | The quiz is ongoing. | Quiz must be finish. | Quiz must be finish. |
| Post Conditions | Participants answer are recorded and submitted. | Answers are submitted and recorded. | Participants can see their results. | Participants can see their ranking compared to others. |
| Basic Flow | 1. Participants logs in. 2. Select “Start”. 3. Answers questions. 4. Finish quiz. | 1. Participants answer a question. 2. Click “finish quiz”. 3. System record answer. | 1. Participants logs in. 2. Select “View Results”. 3. System display results. | 1. Participants logs in. 2. Select “View ranking”. 3. System displays ranking. |
| Alternative Flow | 1. Quiz session is canceled. 2. Participants skips a question and is prompted to review. | 1. Participants change an answer before the quiz is done. 2. Quiz must be done due to timeout. | 1. System delay results viewing due to pending quiz. | 1. System delay ranking due to pending results from other participants. |
| Exception | 1. Network issues prevent quiz submission. 2. System error causes | 1. Network issues prevent submission. 2. System error causes failure to | 1. System error causes failure to retrieve the score. | 1. System error causes failure to retrieve the ranking. |

| | | | | |
|--|-----------------------------------|-----------------------|--|--|
| | answers not to be recorded. | record the answer. | | |
|--|-----------------------------------|-----------------------|--|--|

Appendix

Survey Results

Since our system can't handle 10 participants at once because our system is not responsive for that kind of interaction for now. What we did is the student will be the admin or game host to create her/his quiz and then creating their own account so that they can take the quiz they created.

Functionality Survey

In absolutely agree there is a 78.23% of students that they're agreeing of our system work well while there is 14.12% of generally agree of students and 7.65% for somewhat agree of our system. Formula (total number of checks 5 to 1 / total number of questions / total number of students * 100 percent = total percentage).

| FUNCTIONALITY | 5 - Absolutely Agree | 4 - Generally Agree | 3 - Somewhat Agree | 2 - Slightly Agree | 1 - Completely Agree |
|---|----------------------|---------------------|--------------------|--------------------|----------------------|
| Logging into an account is easy | 9 | 1 | | | |
| Registering an account is easy | 8 | 2 | | | |
| It's easy to view the results of your quiz. | 8 | 2 | | | |
| It's easy to see your ranking after completing the quiz | 8 | 2 | | | |
| It's easy to find the quiz you need to take | 6 | 4 | | | |
| It's easy to share your feedback to the admin | 7 | 2 | 1 | | |
| The admin can see the users who have registered for the quiz game | 8 | 2 | | | |
| The admin can delete users who have registered | 7 | 2 | 1 | | |
| The admin can see the rankings after users have completed the quiz | 10 | | | | |
| The admin can view and delete feedback messages sent by users | 6 | 1 | 3 | | |
| The admin can create questions | 9 | 1 | | | |
| The admin can set a timer for the questions | 10 | | | | |
| The admin sets the scores for the correct answers to the question | 10 | | | | |
| The admin sets a penalty score for incorrect answers to the questions | 6 | 2 | 2 | | |
| The admin sets the number of questions per one quizzes | 8 | 1 | 1 | | |
| The admin can delete quizzes they have created | 7 | | 3 | | |
| The Admin can disable or enable a quiz they have created | 6 | 2 | 2 | | |
| Total | 133 | 24 | 13 | | |
| Percentage | 78.23% | 14.12% | 7.65% | | |

Non Functionality Survey

In absolutely agree there is a 90% of students that they're agreeing of our system that it is a responsive, easy to navigate, easy to understand, and well

designed. Also there is 7.50% of generally agree of students and 2.50% for somewhat agree of our system. Formula (total number of checks 5 to 1 / total number of questions / total number of students * 100 percent).

| NONFUNCTIONALITY | 5 - Absolutely Agree | 4 - Generally Agree | 3 - Somewhat Agree | 2 - Slightly Agree | 1 - Completely Agree |
|---|----------------------|---------------------|--------------------|--------------------|----------------------|
| The system is responsive for a quiz game | 10 | | | | |
| The quiz game is easy to navigate | 7 | 3 | | | |
| The quiz game is easy to understand because of General instructions | 9 | | 1 | | |
| The system is well designed | 10 | | | | |
| Total | 36 | 3 | 1 | | |
| Percentage | 90% | 7.50% | 2.50% | | |

Respondent Photos



