

# Software Development Planning

## A. Elicitation

### Questions

1. What features do you find lacking in Toohak in regards to gameplay and/or customisability?
2. How easily accessible/easy to follow is Toohak? What aspect of your experience was the most difficult to understand and why?
3. How could gameplay be improved to make it more effective for your uses (e.g. for entertainment, education, etc)?
4. Would you prefer more quiz tools and customisability at the expense of straightforwardness or is accessibility a higher priority for you?

### Interviews

Name	Email	Answer
Ayra Saqib	saqib.ayra@gmail.com	If I compare it to kahoot, features I find missing include the countdown showing up before a question, the top 5 players scores and ranking and seeing my rank as well if I'm not top 5. When I use kahoot with my tutoring students this is a very engaging element for them.
		It's quite easy to follow and figure out how it works. The labels and layout make it easy to use the website
		I think what I mentioned in the first question covers it. This is not an aspect of gameplay itself but as a tutor I often like to search up quizzes in kahoot so I don't have to create my own and that's missing here. It adds a lot of convenience for admin users.
		I think both go hand in hand. I would prefer more quiz tools but only as long as they are accessible. If a quiz tool is too difficult to understand its best to be left out.
Luke Moore	lukemoore0734@gmail.com	What I have found is that in Toohak you cannot see the scores of other players in a session. Also in other quiz games like Kahoot there is a team mode that is not there in Toohak.
		Actually using it was easy and intuitive, there was nothing that I thought needed to change to make it easier to use.
		My main critique has already been said of not being able to see all players' scores after a question has ended, which would allow me to see

		how I am doing in comparison to other players in the same quiz which applies to both an educational and entertainment area.
		Well, I personally would prefer a more customisable experience. I reckon that the jump in complexity would be manageable for me so that the ability for greater customisability outweigh the decrease in accessibility
Meryl Lingham	lingham.meryl@gmail.com	In regards to customisability, there's not that much you can customise other than name and pictures i think. Of course I can customise the quiz questions and all and this is probably a little nitpicky but maybe some more customisable options would be nice such as a profile picture. Gameplay is nice and simple.
		I think logging in was simple enough, but when opening up the quizzes I was a bit confused on what to do. For starters, I wasn't sure how to play the quiz, I only realised after that I had to click on the name of the quiz and press start session. Other than that it was quite straightforward.
		One thing I thought of was that it would be better for a game admin to be able to remove a player from the game if needed.
		I don't think having more quiz tools and customisability will chop down on straightforwardness much. You can do both at the same time, and make the instructions more clear.

### Proposed Solutions to problems

The key problems brought to light by our target users are the inability to search for quizzes created by other users of Toohak, to remove players from a session when in the lobby and to view all users' scores during a session. In order to address this, we aim to add a browse tab to the toolbar at the bottom which displays public quizzes grouped by subject. Users should also be able to use a search bar to find more specific quizzes by searching a word/phrase. Secondly, to give session admins more control during a game, we will enable them to have the option to remove a player from the session before the game starts e.g. removing players who have inappropriate names. Finally, at the end of every question, players will be able to see scores of every player in the game session so they can track their progress against others, enhancing player engagement and competition.

## B. Analysis & Specification - Use Cases

### User Stories with Acceptance Criteria

1. As a **primary school tutor**, I want an easier method of using other people's quizzes so that I can find ones on a particular subject or topic.
  - Given that the user wants to browse quizzes created by others
  - When they navigate to the browse section, they are then taken to a page with quizzes listed by subject
  - When they press the search bar and type a word or phrase then they are shown all public quizzes with those word(s) in the title
2. As a **high school student**, I want to be able to see all other players' scores so that I am able to see who has the closest score to me during a game.
  - Given that I am player in a quiz, when I answer a question a score is given based on whether or not the answer was correct and how fast I answered
  - When the question has closed I can see every player's score
3. As a **game admin**, when I am viewing the list of names of all players in the lobby, I would like to be able to remove a player from the lobby, in the case they are using an inappropriate name or are cheating, to maintain a fair environment for players.

#### Player Remove:

- Given that I am viewing the list of players joined in the lobby,
- When I select a player from the list,
- Then I should have an option to remove the player.

### Use Cases

#### **Use Case 1:** Browse through other users' quizzes

- Goal in context: user can view quizzes made by others
- Scope: Toohak
- Level: Secondary Task
- Preconditions: user has registered an account and is logged in
- Success End Condition: user can easily find and use quizzes suited to their needs
- Failed End Condition: user is unable to find a quiz for their needs and must make it themselves
- Primary Actor: User (game admin)
- Trigger: User navigates to browse tab and either scrolls through shown subject lists or searches a word or phrase

#### **Success Scenario 1**

1. User navigates to browse tab
2. User scrolls through subject lists
3. User finds a quiz related to the subject they want

#### **Success Scenario 2**

1. User navigates to browse tab
2. User clicks on the search bar and types a word/phrase
3. User can view quizzes with those words in the quiz name
4. User finds a quiz related to the topic they want

#### **Use Case 2:** View other players' scores during a game after every question

- Goal in context: After every question, all players' scores are visible to all players
- Scope: Toohak
- Level: Tertiary Task
- Preconditions: Player has joined a quiz session and has answered at least one question
- Success End Condition: Player has answered a question and can see all other players' scores
- Failed End Condition: Player can only see their score after answering a question
- Primary Actor: Player
- Trigger: The question has closed and displays the results for that question

**Success Scenario 1:**

1. Player join a session with other players
2. All players submit an answer to the question within the duration
3. The players are informed on whether they answered the question correctly
4. The next state shows all players' scores in descending order

**Use Case 3:** Remove a player

- Goal in context: User can remove a player from a quiz session during LOBBY state
- Scope: Toohak
- Level: Tertiary Task
- Preconditions: The user has created a quiz and started the session. The session is in lobby state where players can join.
- Success End Condition: The selected player is removed from the session and the list of players in lobby state reflects the removal of the player.
- Failed End Condition: The player remains in the session
- Primary Actor: User (game admin)
- Trigger: The User selects a player's name during lobby state

**Success Scenario 1:**

1. A player joins the session with a name that the admin does not approve of
2. Admin removes the player from the session
3. List of players in the LOBBY now does not include that player's name

## C. Validation

### Extent To Which Use Cases Describe Their Problems

Name	Comment
Ayra Saqib	The use case for browsing quizzes by subject and/or a word or phrase solves my problem pretty well since it would allow me to look through quizzes based on subject and if I wanted to I could search up a phrase. This would be very beneficial if I were to use Toohak for tutoring purposes.
Luke Moore	After seeing the use case for being able to see all players' scores, including my own after the question has closed, I would say that my issue has been well covered by it. And adding this to Toohak would improve my overall experience as a player.
Meryl Lingham	I think the use case summarises and addresses my problem with removing a player very well, as I would be able to remove a player from a quiz session with these changes.

## D. Interface Design

### HTTP Endpoints For Browsing Through Other Users' Quizzes

Server Route	Description	Parameters	Responses
PUT /v1/admin/quiz/ {quizid}/public	Update the quiz permissions so it is public. All quizzes are set to private as default. When this route is called, the timeLastEdited is updated.	<u>Header</u> : token <u>Params</u> : quizId <u>Body</u> : {}	<u>200</u> : - {}  <u>401</u> : - Token is empty or invalid (does not refer to valid logged in user session)  <u>403</u> : - Valid token is provided, but user is not an owner of this quiz or quiz doesn't exist
PUT /v1/admin/quiz/ {quizid}/subject	Update the subject of the quiz by passing in one of the subject options. When this route is called, the timeLastEdited is updated.	<u>Header</u> : token <u>Params</u> : quizId <u>Body</u> : quizSubject	<u>200</u> : - {}  <u>400</u> : - subject is not valid a valid subject enum  <u>401</u> : - Token is empty or invalid (does not refer to valid logged in user session)  <u>403</u> : - Valid token is provided, but user is not an owner of this quiz or quiz doesn't exist
GET /v1/admin/quiz/ browse/{subject}	Get all of the public quizzes on the provided subject	<u>Header</u> : token <u>Query</u> : quizSubject	<u>200</u> : - { quizzes: [{quizId, owner, name, description, numQuestions, duration}] }  <u>400</u> : - subject is not valid a valid subject enum  <u>401</u> :

			- Token is empty or invalid (does not refer to valid logged in user session)
GET /v1/admin/quiz/ browse	Get all of the public quizzes containing given word or phrase in the quiz name	<u>Header</u> : token <u>Query</u> : keywords	<u>200</u> : - { quizzes: [{ quizId, owner, name, description, numQuestions, duration }] }  <u>400</u> : - keywords are less than 3 or more than 30 characters. - keywords contain invalid characters.  <u>401</u> : - Token is empty or invalid (does not refer to valid logged in user session)

### HTTP Endpoints For Viewing Other Players' Scores After Every Question

Server Route	Description	Parameters	Responses
GET /v1/player/{playerId}/question/{questionPosition}/score	Retrieves the scores of all players in an active session that a player is in. The scores are listed in descending order based on the score.  Question position starts at 1.	<u>Params</u> : playerId questionPosition <u>Query</u> : {}	<u>200</u> : - { player: string, score: number } [ ]  <u>400</u> : - session is not in SCORE_SHOW state - questionPosition is not valid for the session - playerId does not exist - If session is not currently on this question

### HTTP Endpoints For Removing A Player

Server Route	Description	Parameters	Responses
DELETE /v1/admin/quiz/{quizid}/session/{sessionId}/players	Remove a player from a quiz session.	<u>Header</u> : token <u>Params</u> : quizid, sessionId <u>Query</u> : playerName	<u>200</u> : {}  <u>400</u> : - The specified player does not exist in the session - session is not in END state

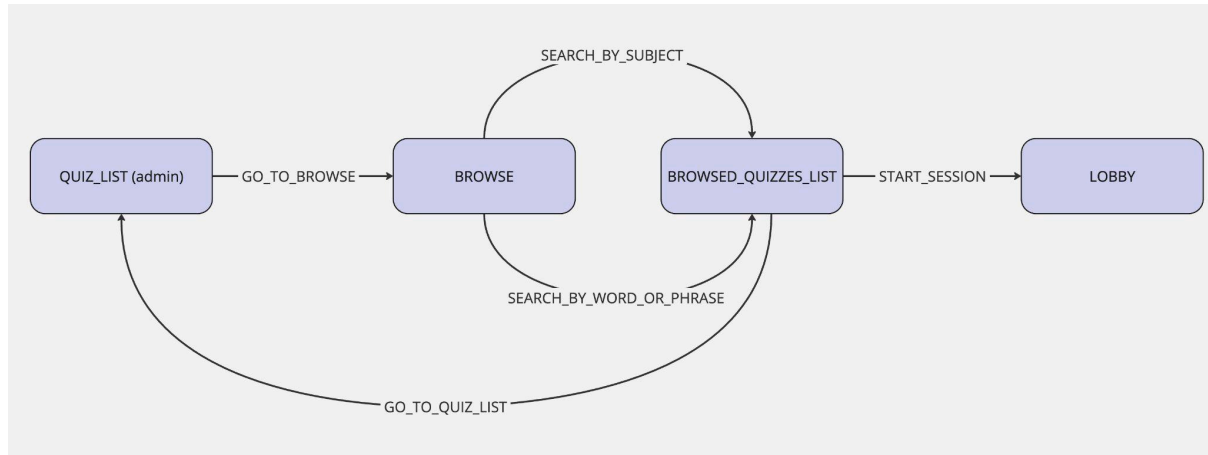
			<p><u>401</u>: Token is empty or invalid (does not refer to valid logged in user session)</p> <p><u>403</u>: Valid token is provided, but user is not an owner of this quiz or quiz doesn't exist</p>
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## D. Conceptual Modelling - State Diagrams

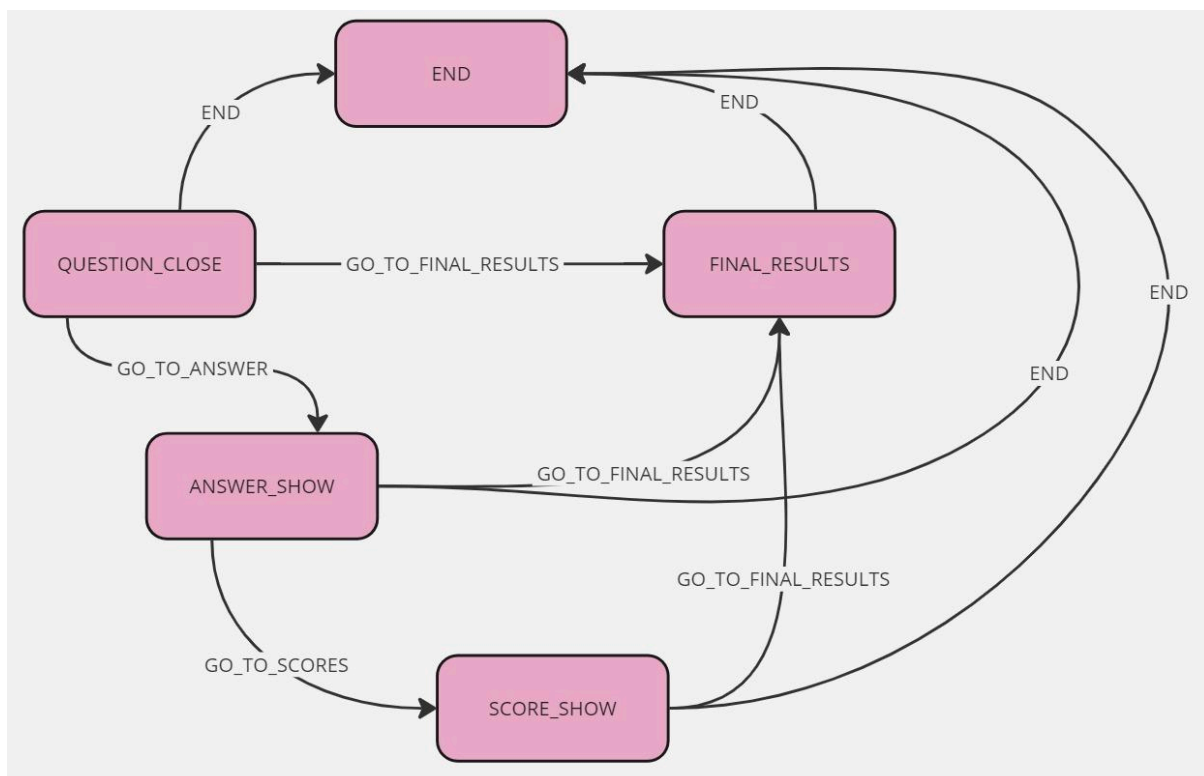
### State Diagram For Browsing Other Users' Quizzes

- This diagram attempts to visualise the Toohak program, where a user is on the QUIZ\_LIST tab as default and then presses the hypothetical BROWSE tab to view public quizzes
- Once they find a quiz they like, they can start a session for the quiz and provided session states extend from LOBBY like for quizzes owned by the user



### State Diagram For Viewing Other Players' Scores After Every Question

- This state diagram is based on the given session state diagram in the spec.
- Thus, only the part related to the proposed route has been shown as the rest remains the same



### State Diagram For Removing A Player

- This state diagram shows how the state of this route will change depending on admin actions. The start state assumes that the session is in LOBBY state where players are free to join and the user is viewing the list of players in the session.
- When the user selects a player and removes them the player list is updated, otherwise if they cancel the selection they are back in the start state.

