Iteration 3 - Group Dream

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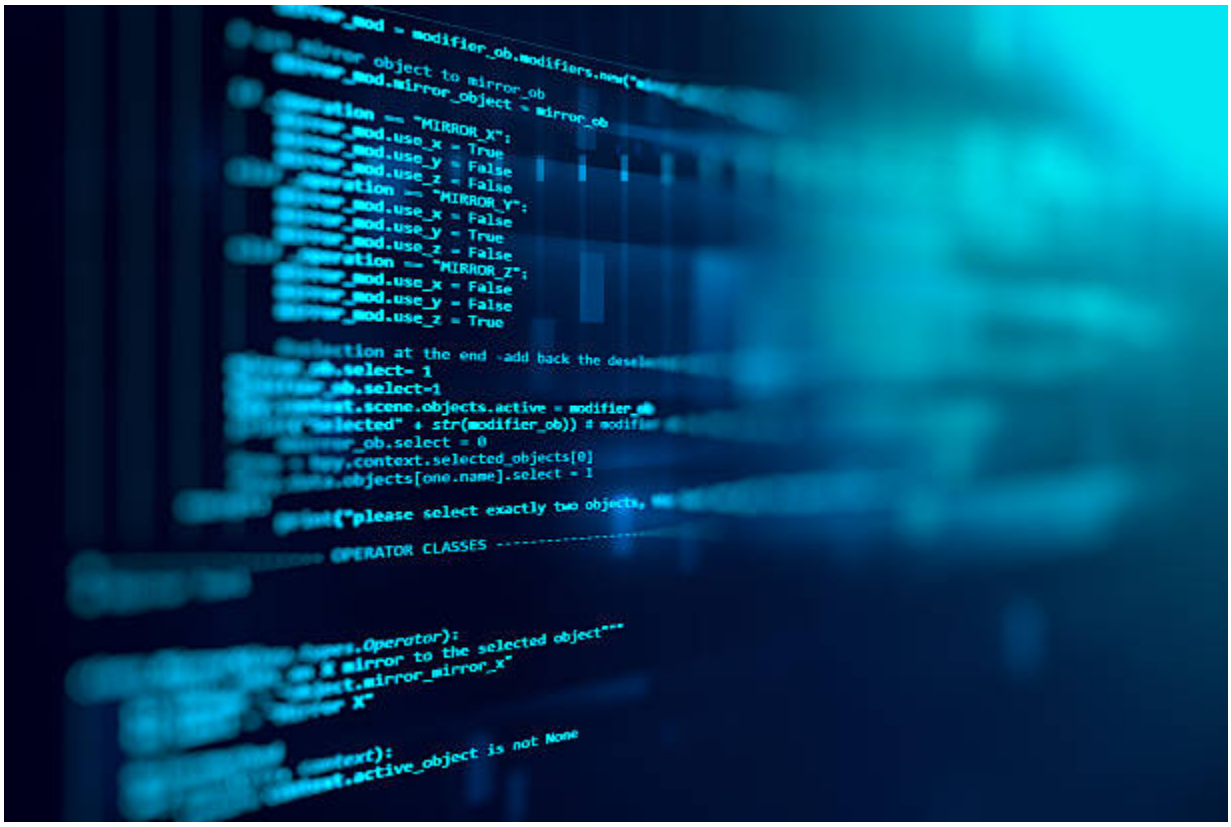

Elicitation

Questions asked to users:

1. What is was the main interactive learning tool that you have used at uni, work, or back in highschool, and how was this software utilised?
2. What were the advantages of using this type of software in learning?
3. Has this software ever been useful outside of educational purposes?
4. What was the biggest issue that you have faced whilst using this software, and how often did this problem occur?
5. Is there anything you would like changed, or implemented further for this software in the future?

Target User 2:

- Name: Irene Park
- Email: jiyepark7@gmail.com

Response to questions:

1. Kahoot is the main interactive learning tool I am currently using in highschool. At school, this games-based learning platform was used by teachers to create quizzes that replaced text-boook based learning for students, making class more fun and enjoyable.
2. The use of Kahoot as part of learning had several advantages. Firstly, it made learning enjoyable and interactive. The competitive aspect of the quizzes motivated students like myself to actively participate and pay attention to the class material. Additionally, Kahoot provides instant feedback on the quiz results allowing students to learn from their mistakes instantly.
3. Kahoot is regularly used outside of school between my friends and I, especially we are just playing games for fun. I think Kahoot allows chances for learning but also can be a great gaming tool to play fun quizzes with your family and friends.
4. The most significant issue that I faced while using Kahoot, are occasional lags while submitting answers. As I have mentioned before, since it is a game-based learning tool, it is frustrating when I have obviously realised answers first but could not submit answers faster than everyone else because of the lags.
5. I think Kahoot would provide much more interesting experience if it solved the issues of lagging when submitting answers.

Target User 2:

- Name: Iris Baek
- Email: baeksunwoo1206@gmail.com

Response to questions:

1. I used Kahoot in most of my tutorial classes with the aim of revision of previous week's contents.
2. It helped me understand which topic I need to revise more as Kahoot allows a variety of questions for students to practice.
3. I actually have never used Kahoot outside of uni or high school.
4. When a large number of students participated in the same quiz, there was a high frequency of lagging. Some people had to re-join the room to access the quiz which made it more time consuming and inconvenient.
5. Improvement in lagging is required to attract more students to make use of this software.

Target User 3:

- Name: Cathy Kim
- Email: cathykim64@gmail.com

Response to questions:

1. I have mainly used and experienced Kahoot and Socrative as a interactive learning software. It was used in uni and highschool to revise content or to introduce a new topic, trying to get more students to become interested in the content.
2. Both of the softwares gives stressed students a moment to take a deep breathe. I found that using these softwares fosters a much more positive classroom environment, helping students to be more encouraged in learning.
3. I have used Kahoot at places like church camps or various other events, as it is a great ice-breaker but also a fun way to socialise and become closer with people.
4. Sometimes, others around me have older devices or phones that are not the newest releases, and connection to games become problematic for them, and lags quite alot. Another problem may be that places like chuch camps or schools need a separate mode where it filters out inappropriate chats or like a banning system where students who might be silly need to be banned for a while from the game
5. An improvement or extension of the software I'd like to see is switching from different modes that switches target users. E.g. Youtube kids and normal Youtube mode.

Proposed Solution to all problems:

Much of the issues faced my users is the lagging of server in high-traffic situations. Heavy loads and slow reponses are the main cause to users' frustrations, thus to solve this situation we have come up with few solutions:

1. **Server Scaling and Load Balancing:** We can dynamically add or remove servers based on demand, ensuring optimal resource allocation and distributing the workload efficiently across multiple servers.
2. **Session and Guest Player Sanitisation:** To reduce storage capacity requirements, we can implement regular sanitisation of sessions and guest player data. Removing outdated sessions beyond a specified date can help free up storage space. Furthermore, reducing time and space needed for iterative algorithms like find, findindex, filter, and map, to retrieve data for sessions and players leads to more efficient processing and improved performance.
3. **Asynchronous requests**: Since synchronous requests have the drawback of increased processing time, due to the fact that each request waits for the previous one before it can be completed. This can potentially cause more instances of server hang-ups or crashes. However, asynchronous request offload time-consuming tasks to background processes making them a better option for improved performance and stability.

These solutions dynamically adjust server capacity, efficiently manage data storage, and optimize data retrieval processes, resulting in a smoother and more responsive system.

Other problems or hopeful extensions of software were switching modes between types of contents displayed or target users. This request can be satisfied through adjusting the software architecture to accommodate different modes. Certain boundaries between the different modes may need to be defined, as well as handling mode-specific data. Transitions between modes also must be considered carefully.

Analysis & Specification

User story 1:

User Story:
As a user who is a highschool student, everytime there is a competitive class quiz, I want to submit answers fast, without a lag, so that I can achieve well in the quiz.

User Acceptance Criteria:

1. Joining the session of the quiz should be smooth, with no glitches.
2. Large number of other users also join at the same time with no issues.
3. Questions should be open at near the same time for all users so that it is fair.
4. During the quiz, the process of submitting the answers should be quick without any noticeable lag.
5. Timer for questions should have no sudden glitch occurring so that questions can be thoroughly examined by users.

User story 2:

User Story:
As a user who is a uni students, everytime I use quizzes for revision before tests, I want to be able to answer and go through the quiz without lagging problems, so that I can save time.

User Acceptance Criteria:

1. Joining the session of the quiz should be smooth, with no glitches.
2. Session with a single player should be allowed.
3. Submission of answers should be smooth and fast, without a lag.
4. Timer for questions should be consistent with no sudden glitch occurring so that user is able to take time in answering.
5. Results should be provided instantly, without delay so that user is able to take instant feedback.

User story 3:

User Story:
As a user who organises family events, everytime I select a quiz to play, I want to be able to filter out inappropriate content

User Acceptance Criteria:

1. System provides feature to type in certain words that are related to what user considers a inappropriate content to see
2. Should maintain user privacy and data protection while conducting the content filtering process
3. The filtering system should successfully update the system to ban and exclude unwanted chat, comment, content or users, fitting the personal preference of admin user.
4. Able to switch the modes on and off using token Id and session Id input
5. The user should have the ability to report any quizzes that have been filtered incorrectly

Use Cases:

Use Case 1:

Use Case	Fast software - Minimal input lag during quiz sessions.
Goal in context	Software does not diminish in speed and its quality in delivery of content, even when there is a high network activity.
Precondition	Software works to a satisfiable level, however lacks to provide efficiency and speed during high network activity
Success End Condition	The software is able to provide user with a faster server response and less lag.
Failed End Condition	The software continues to lag, thus user must wait a longer time.
Primary Actor	The creators.
Trigger	High network connectivity.

Use Case 2:

Name	Banning system - Filters out unwanted content
Summary	The user is able to utilise the software with more comfort, filtering out contents that are inappropriate, and being able to ban unwanted players during session.
Rationale	When playing a quiz on the system, there are times when you are worried that there may be inappropriate contents for particular group of players. However, trying to restrain this from happening via physical actions are difficult, for example, having a person go outside a classroom to restrict them from playing a game. The banning

	function allows the admin user to select users or chat texts to remove from their screen. There may be times when the user wants to 'un-ban' particular users too, thus the filtering system is able to be reversed.
Users	All users
Preconditions	Software is able to accomplish all functions, however does not provide ways for the user to filter out unwanted user or content.
Basic Course of Events	1. The user indicates that the software is to perform a filter/banning process in the quiz session. 2. The software responds by requesting the particular user/texts that needs to be restricted and removed. 3. The user inputs the player Id, or inputs particular text of words to be filtered out, or to be banned during the session. 4. The software restricts the particular player from submitting answers, chats or both, furthermore filters out certain words from chat.
Alternative Paths	1. After step 3, the admin user decides to unban a certain player in which the software removes restrictions from the player of the inputted player Id. Thus conditions returns to before uncomfort in quiz session has risen. 2. During step 3, the user inputs only particular texts to be filtered and no specific players, in which the software only filters out certain chat messages with inputted text. 3. During step 3, the admin user only inputs player Id, where all of player's chats and there participation in quiz session is restricted.
Post Conditions	The user is able to play quizzes with more comfort, having contents such as chats with inappropriate wording removed, and being able to ban unwanted players.

Validation

Target User 1:

- Name: Irene Park
- Email: jiyepark7@gmail.com
- Comment: This is a great understanding of my issue, and I hope that a solution can be put into fixing this very soon.

Target User 2:

- Name: Iris Baek
- Email: baeksunwoo1206@gmail.com
- Comment: All of the problems that I have had while using these softwares are outline and discussed well. I wish that extensions can be made to solve the issue.

Target User 3:

- Name: Cathy Kim
- Email: cathykim64@gmail.com
- Comment: My struggles are recognised very well. If the issues are solved, I believe I would use it more often.

Interface

Based on the user stories provided, the following interface has been proposed for user case 2:

Name and Description	**HTTP Method**	**Data Types**	**Exceptions**
Chat text filter (User inputs words to filter out from chat)	PUT	- Token Id - Session Id - Words: (String array)	401: - Invalid token structure 403: - Token is valid but is not logged in 400: - Session Id does not exist - Words types in are not alphabetical characters - Empty words array provided - One or more words are duplicates
Ban player chat (Ban someone from responding in the chat)	PUT	- Token Id - Session Id - PlayerId: (Player Id to be banned)	401: - Invalid token structure 403: - Token is valid but is not logged in 400: - Session Id does not exist - Invalid Player Id
Ban player (Restricting a player's answer submission during session)	PUT	- Token Id - Session Id - PlayerId: (Player Id to be banned)	401: - Invalid token structure 403: - Token is valid but is not logged in 400: - Session Id does not exist - Invalid Player Id
Activate, deactivate word filters	PUT	- Token Id - Session Id - Passphrase: (String that will be used to authenticate whether filter can be turned off - ON/OFF) - State:	401: - Invalid token structure 403: - Token is valid but is not logged in 400: - Session Id does not exist - Passphrase does not match the filter's passphrase

		(String that is used to signal whether filter is to be activated, deactivated - ON/OFF)	- State does not match any valid actions - No active filter
Unban a player	PUT	- Token Id - Session Id - PlayerId: playerId to be unbanned	401: - Invalid token structure 403: - Token is valid but is not logged in 400: - Session Id does not exist - Player Id does not exist - Player Id is not banned

State Diagram (User case 2)

Below is the state diagram for the FILTER system that was proposed, and how it will work: