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**PROJECT NAME - TRIVIA CRACK**

**SOFTDEV - PD1**

**DESIGN DOCUMENT**

## **I. Project Description**

For our project, we are planning to create a trivia game website. When creating an account, they will be able to select a username and a nation they would like to represent. Users will be able to play multiple modes of trivia, including single player, multiplayer 1v1, and multiplayer 5v5. Winning games will reward both score points and currency. Currency can be used in the store to buy packs, which will give unique profile pictures for users to collect. Score will be displayed in a global leaderboard that shows off the top users' and nations' scores.

### **Core Features that must be added in the minimum viable product**

- Users will be able to sign up for an account and log in to an existing account.
- Users will be able to make a username and choose a nation to represent when they sign up.
- Users can play single-player trivia to earn points.
- After answering a trivia question (whether right or wrong), the user will be linked to a wikipedia page where they can find more information on the topic.
- Users will be able to select a category they want to answer a trivia question from.
- Scores will be displayed in a global leaderboard that shows both the top nations and top users.
- Users can go into their profile to change their login credentials.

### **Additional Features we would like to add for the final product**

- Two new game modes: Multiplayer 1v1 against another random user and team-based multiplayer where users take turns answering trivia questions.
- Users can join specific multiplayer games with their friends using game IDs.
- Users can earn currency from trivia.
- Currency can be used in the store to buy packs of random profile pictures from shows like Rick and Morty.
- Users can go into their profile to change their profile picture.
- Users can view other users' profiles from the leaderboard to see which profile pictures they own.

### **Features we will only add if there is extra time**

- Buying things in the shop will give random facts.
- Users can play games in multiple arenas from different nations around the world.

- Users can search for the history of a specific game using game IDs.
- Showing more advanced statistics in the leaderboard (which nation does best at a certain topic, which nation does best in a certain arena, etc.).
- Public vs. private multiplayer games (private ones would require a password to join).

## **II. Component Description**

### **Frontend**

#### **CHOSEN FRAMEWORK:** Bootstrap

- Login/Sign Up stored in User Database
  - Wrong password or username for login will redirect to login page with error message
  - Will have error message if signing up with existing username or a missing password/username
- Homepage
  - Has four sections:
    - My Profile
    - Leaderboard
    - Play
    - Store
- Profile (stored in users db)
  - See user score and stats/rank in each category
  - View profile picture/change it using inventory of pictures
  - See country flag
  - List of games participating in
- View other Users Profile (stored in users db)
  - Can see the stats/rank of the other user
  - View what game the other user is participating in
  - See profile picture and country flag
- Inventory of pictures
  - Each person has a collection of pictures bought
  - Displays all pictures that can be selected as profile picture
  - Only shows up when user wants to change profile picture
- Leaderboard (obtained from users db)
  - See top ranked nations or users
- Play
  - Single Player Mode
    - Pick a category to answer questions about and add points to your score and gain money
    - Shows wikipedia page for the answers after selecting answer
  - PVP Mode
    - Send request for battle and number of questions for trivia

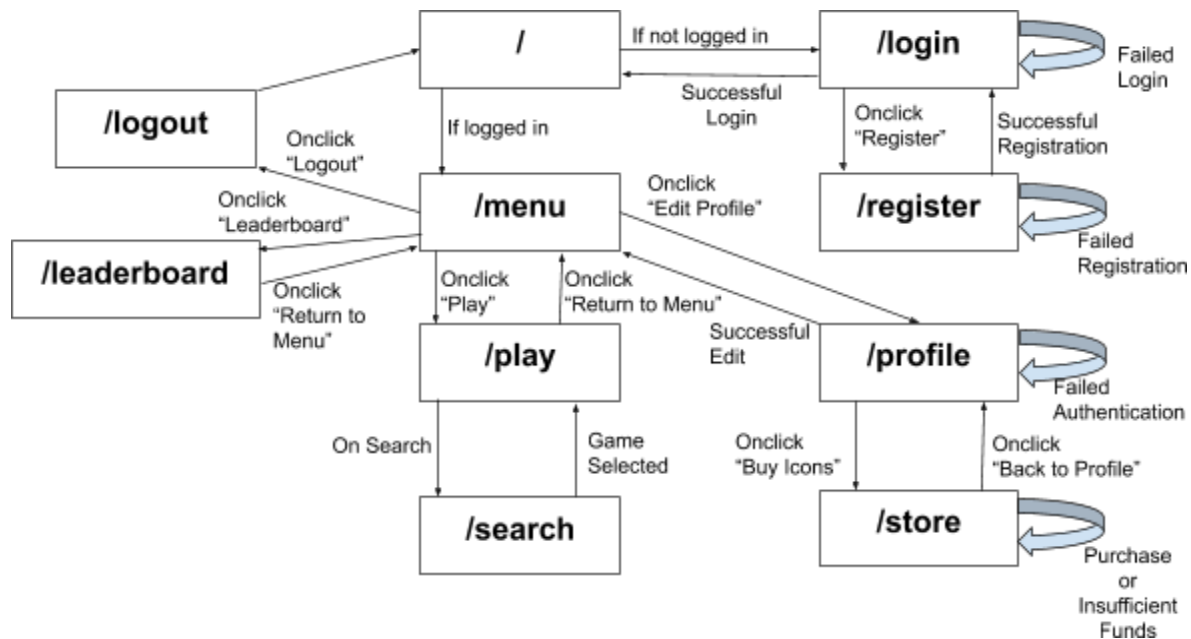
- First player must finish all trivia questions before same exact questions sent for the second player to complete
  - Whoever scores highest wins
  - Shows wikipedia page for the answers answer
- Team Relay Mode
  - Join red or blue team, must have at least four participants who accepted invite to start game
  - Each player is given a number and that is the order of their turns. Whichever team can survive more rounds wins
  - Shows wikipedia page for the answers answer
- Search Mechanism (stored in games db)
  - All Multiplayer games will have game id (stored in game db)
  - All users can join any game
  - Can search for other players to see what games they are joining
  - Can search for game id to join games
- Store
  - Pick picture category: space, rick and morty ...
  - Use money to purchase new profile picture

## **Backend**

- Searching Mechanism
  - Using SQL search through game database and user database
  - Can choose to search usernames or game ID
- User Database
  - Profile picture
  - Picture collection
  - List of game IDs
  - Money and Score count
  - Ranking
  - Password and Username
- Game Database
  - List of games with game id
  - One of three modes
  - Players in each game
  - Erase finished games
- APIs we are using
  - Trivia API
    - [https://opentdb.com/api\\_config.php](https://opentdb.com/api_config.php)
  - Wikipedia API
    - <https://en.wikipedia.org/w/api.php>
  - NASA API
    - <https://api.nasa.gov/>
  - Rick & Morty API
    - <https://rickandmortyapi.com/api/>

- Country API
  - <https://restcountries.eu/>

### III. Site Map



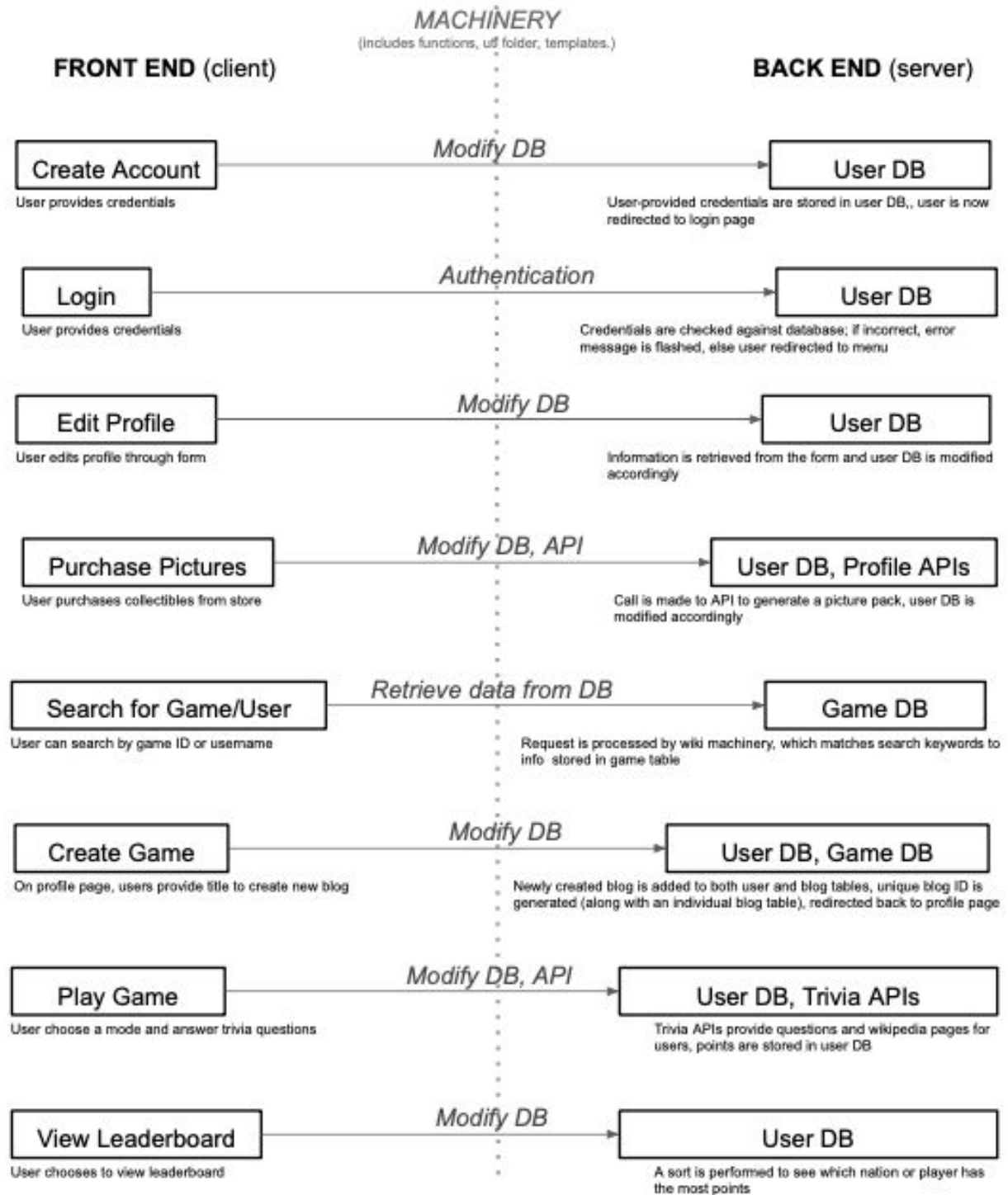
### IV. Component Map

#### TRIVIA APIs

1. Open Trivia API
  - Provides trivia questions to be used in games
2. Wikipedia API
  - After use answers trivia questions, some more information on the topic may be provided from a Wikipedia page

#### PROFILE APIs

1. Countries API
  - Users must choose their country since leaderboard is organized by country
2. NASA API / Rick and Morty API
  - Used to provide collectibles that users can purchase with points earned from trivia game



## V. Database Design

### User Table

username	password	pic	coll	game_id	money
AZ123	pekingduc	randomlink	link1, link2, link3, link4	P125, T12R, T145B, P121	1200

flag	stat	score
USA	History 10 40, Entertainment 39  40	2100

#### Description:

username - stores username as TEXT, no trailing spaces or quotes allowed

password - stores password as TEXT, no quotes allowed

pic - stores src of user's current profile picture as TEXT

coll - stores comma separated list of user's collection of pictures as TEXT

game\_id - stores comma separated list of games that user is participating in as TEXT (see **game table** for more info)

money - stores amount of money user has as INT

flag - stores name of user's country as TEXT

stat - stores comma separated list of all categories of trivia questions, pipes indicate separation between questions attempted and questions correctly answered for that category (TEXT)

score - stores total number of points accumulated by user as INT

### Game Table

game_id	participants	team1	team2
P122	harryPotter, Voldemort	70, harryPotter	60, Voldemort
T134A	Amanda, Jennifer11, Theodore12, James01	130, Amanda, Jennifer11	80, Theodore12, James01

#### Description:

game\_id - stores ID of game as TEXT, takes the format of a letter (P for PVP, T for team relay) plus a random number; for team relays, extra letter (R or B) is appended to denote teams

participants - stores comma-separated list of the usernames of participants

team1 - stores comma-separated list of participants, with first item in the list being the score

team2 - see team1

## Cached Game Table (Ongoing Games)

game_id	participants	team1	team2	playing
122	harryPotter, Voldemort	70, harryPotter	60, Voldemort	harryPotter
134	Amanda, Jennifer11, Theodore12, James01	130, Amanda, Jennifer11	80, Theodore, James01	James01

### Description

(see game table)

playing - stores username of user whose turn is next as TEXT

## Cached Questions Table

category	question	diff	choices	answer
Entertainment	"What year was Beyonce born?"	Easy	1981, 1982, 1983, 1984	1981

### Description

category - stores category of question as TEXT

question - stores question as TEXT

diff - stores difficulty of question as TEXT

choices - stores different choices for question as comma-separated list (TEXT)

answer - stores answer of question as TEXT

## Flags Table

country	flag
USA	randomlink

### Description

code - stores country as TEXT

flag - stores src of image of country's flag as TEXT

## VI. Division of Labor

### A. Roster

- Jackie Lin (project manager)
- Amanda Zheng (user experience)
- Junhee Lee (game developer)

- Michael Zhang (game developer)

## **B. Specific Task Breakdown**

1. Sign In (Amanda) / Login (Michael)
  - a. Actual HTML page
  - b. Database for sign in and login
  - c. Error messages
  - d. Sign up Inquiries
2. Profile
  - a. Change password (Jackie)
  - b. Picture inventory (Junhee)
    - i. Display all pictures owned
    - ii. Picture gallery
    - iii. Select picture to be profile picture
  - c. View stats, rank, score and flag (Jackie)
  - d. List of current games that you are participating in (Junhee)
    - i. Shows who is currently playing
3. Leaderboard (Amanda)
  - a. User leaderboard
    - i. All users ranked
  - b. Nation leaderboard
    - i. Country ranking
  - c. Country Leaderboard
    - i. Ranking of all users with same country as user in session
4. Games
  - a. Single Player game (Jackie)
    - i. Category of questions and get questions
    - ii. Wiki answers
    - iii. point scoring
    - iv. Money addition
    - v. Wikipedia answers
  - b. PVP (Michael)
    - i. Order of play
    - ii. Questions and scoring
    - iii. Winner
    - iv. Game database edits
    - v. Wikipedia answers
  - c. Team Relay (Junhee)
    - i. Selection of Teams
    - ii. Order of Play
    - iii. Questions and player tracker
    - iv. Winner
    - v. Game database edits



vi. Wikipedia answers

5. Store (Amanda)
  - a. Money changes
  - b. Select category of pictures
  - c. Randomly buys a picture (could be duplicate)
  - d. Add to database
6. Search Mechanism (Michael)
  - a. Search by usernames and display profile page of user
  - b. Search by game id