CS 4485 Spring 2024

UTD CS Project

‘SocialPlay: Workout Challenge’

Design Document

Team #: 48

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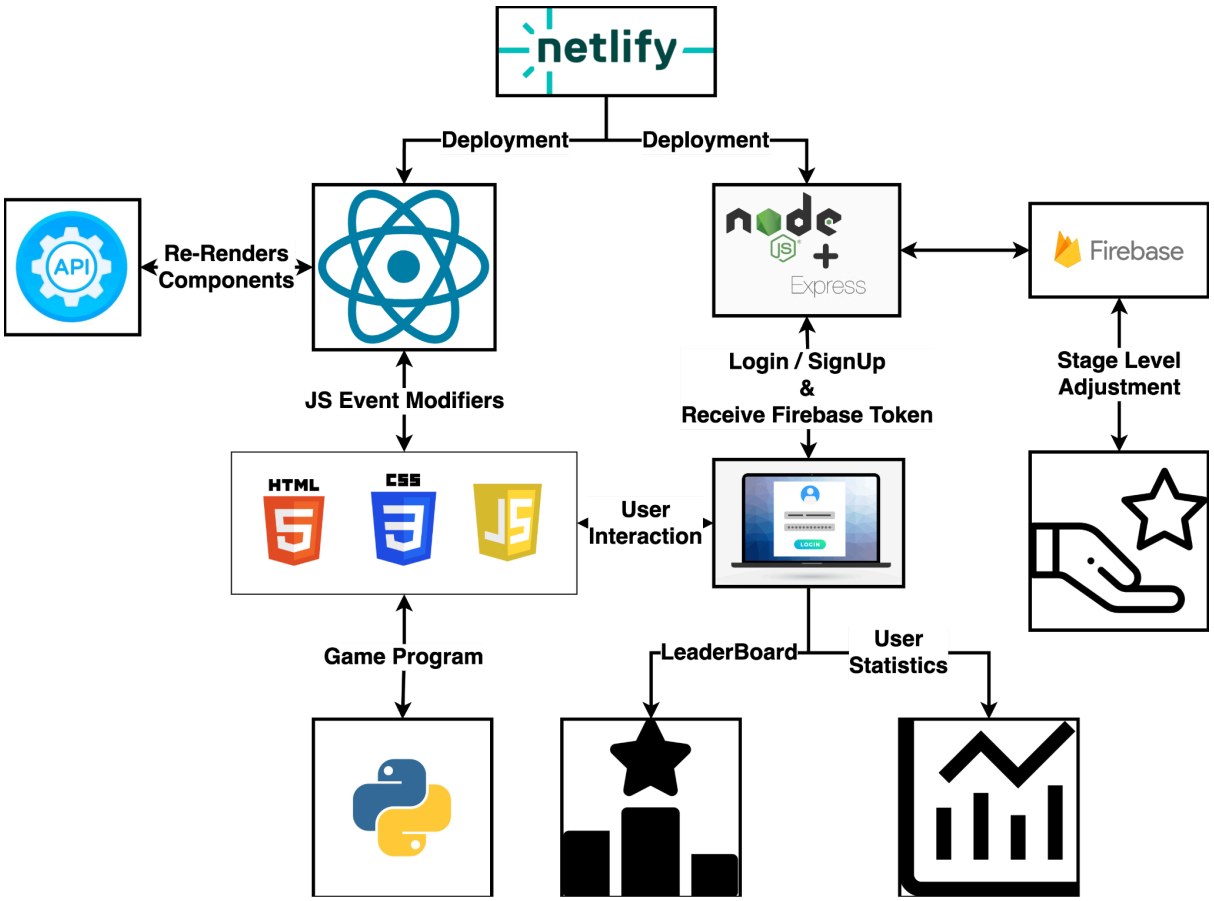
Introduction:

We are Team 48, the creator of "SocialPlay: Workout Challenge." This project aims to revolutionize social media fitness challenges by integrating advanced body-tracking algorithms and dynamic gameplay mechanics. With a focus on fostering community interaction and healthy competition, SocialPlay offers customizable body part tracking, randomized obstacle courses, and a comprehensive leaderboard system. Through this platform, we aim to inspire users to embrace an active lifestyle while providing valuable insights for brands and organizations.

Project Description:

SocialPlay innovates social media fitness challenges by incorporating a cutting-edge body-tracking algorithm based on computer vision technology. Users can select specific body parts such as head, shoulders, elbows, knees, and feet, tailored to their chosen workout. The platform introduces a dynamic gaming element with randomly generated pipes, requiring users to maneuver a bird attached to their selected body part to dodge obstacles and score points. A leaderboard tracks user scores, fostering healthy competition, while recordings of gameplay can be effortlessly shared on social media platforms, amplifying user engagement and recognition. This innovative approach not only promotes physical activity but also provides valuable data insights for brands and organizations to customize future challenges. SocialPlay redefines fitness challenges by offering an immersive, gamified experience that motivates, connects, and rewards users for their commitment to self-improvement.

Top Level Design:

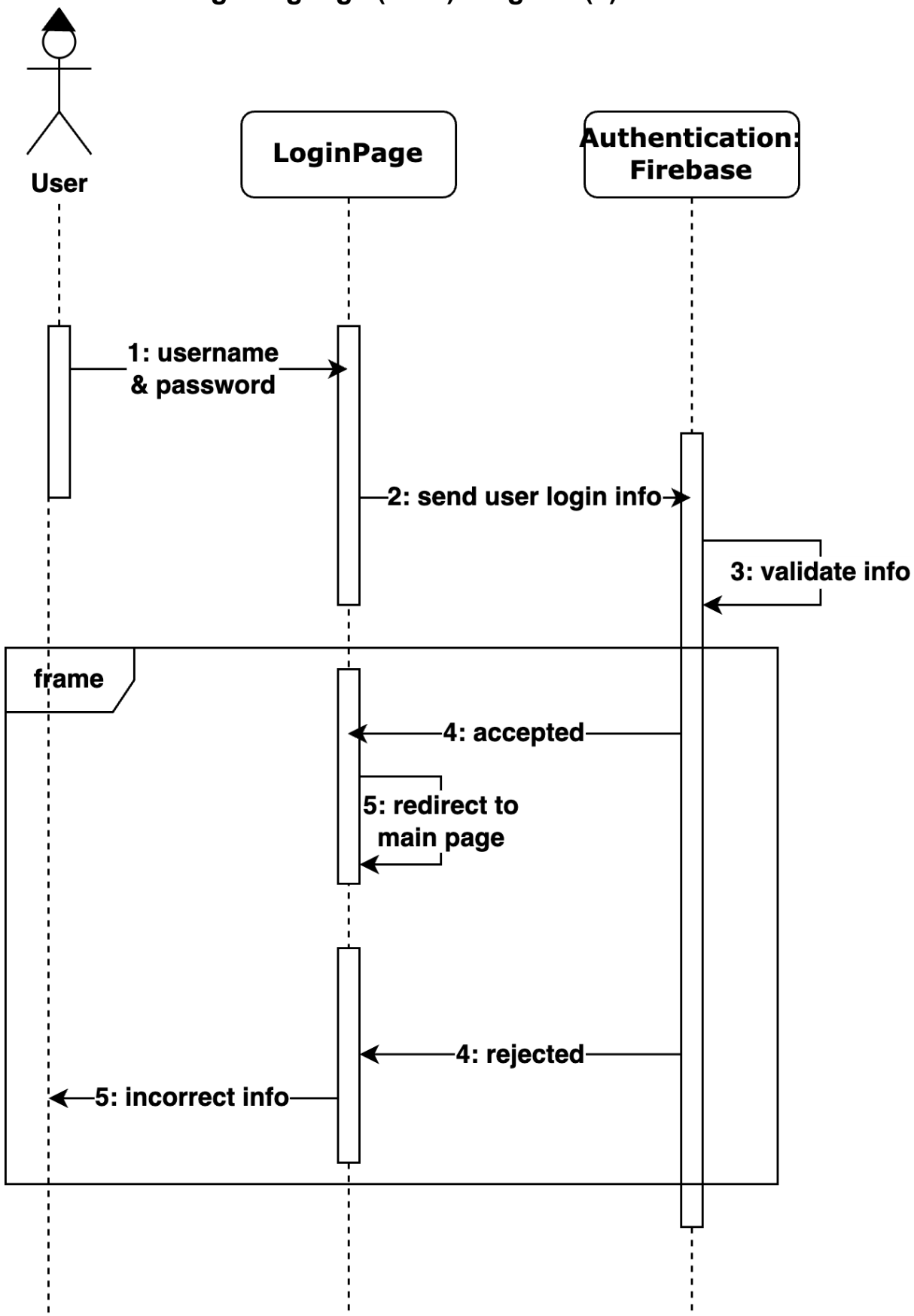


The Top-Level Diagram shows how the components interact with each other. They are as follows:

- **Netlify:** A deployment platform that helps you deploy and manage websites and web applications.
- **Firebase:** A backend platform for developing mobile and web applications. It provides developers with tools for user authentication, hosting, databases, cloud functions, and more.
- **API (Application Programming Interface):** A set of definitions that allows applications to interact with each other. In the context of the flowchart, the API likely refers to the way that the game program interacts with the user interface, database, and other components.
- **User Interface (UI):** The part of the game that the user interacts with. This could include the game's menus, screens, and buttons.
- **Game Program:** The code that makes the game run. This includes the game's logic, rules, and mechanics.
- **LeaderBoard:** A list of the top players in a game.
- **User Statistics:** Data about the user's performance in the game. This includes the user's biological information, score, level, and number of games played.
- **HTML:** A markup language used to structure and format the content of a web page.
- **CSS:** A style sheet language used to control the presentation of a web page, such as the colors, fonts, and layout.
- **JS Event Modifiers:** JavaScript code that can be used to modify the behavior of events on a web page. For example, a JS event modifier could be used to prevent a button from being clicked multiple times.
- **Stage Level Adjustment**: Recommend users the level of the stage based on their performance along with their biological information.

For example, the user interacts with the UI, which sends signals to the game program. The game program then interacts with the database to store user statistics and update the leaderboard. The game program also interacts with the API to render the UI components.

Unified Modeling Language (UML) Diagram (1):



The UML diagram illustrates a user login process with potential success or failure branches. Here's a breakdown of the elements and their interactions:

- **User:** This is the actor initiating the process.
- **loginPage: Login page:** This represents the user interface where the user enters their credentials.
- **authentication: Authentication:** This component is likely responsible for validating the user's credentials. It interacts with Firebase, which could be a backend service or database.
- **send user login info into** (arrow): This indicates the user sending their login information to the login page.
- **validate login info into** (arrow): This shows the login page sending the user's credentials to the authentication component.
- **Firebase** (database): This external system stores or validates user login credentials.

Based on the validation result from Firebase, the process splits into two branches:

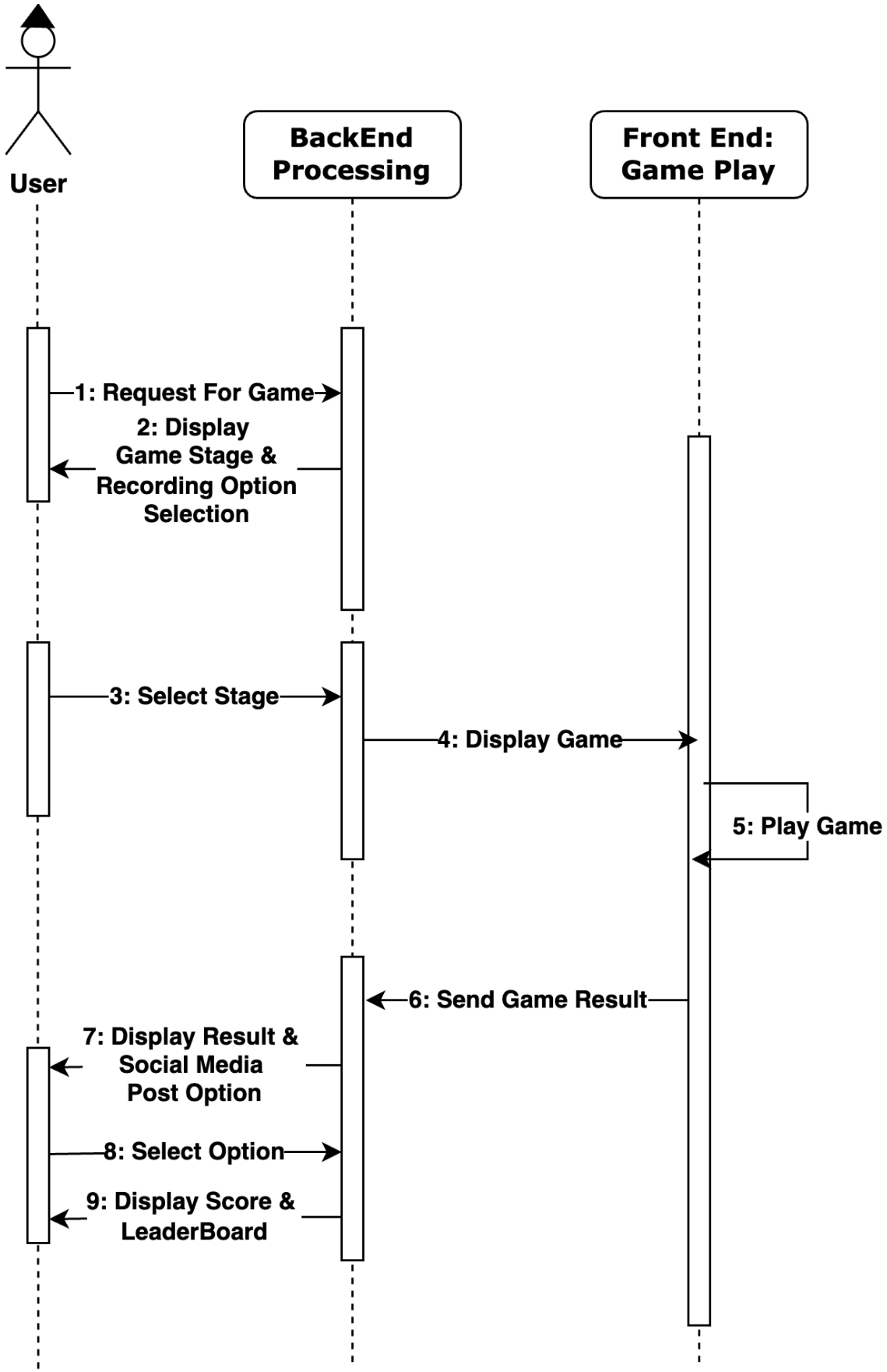
Success Branch:

- **accepted** (decision diamond): This indicates successful login credentials.
- **redirect to main page** (arrow): This shows the system redirecting the user to the main page after successful login.

Failure Branch:

- **Incorrect info** (text near the bottom): This indicates the user entered wrong login credentials.
- **rejected** (decision diamond): This indicates failed login credentials.

UML Diagram (2):



This UML sequence diagram outlines the flow of interactions between a user and a system for playing a game. It describes the sequence of messages exchanged by objects in a game system, which includes both backend processing and frontend gameplay. Here's a description of the flow depicted in the UML diagram:

- **Request For Game**: The interaction begins with the user requesting to play a game.
- **Display Game Stage & Recording Option Selection**: The backend processing responds by displaying the game stages and recording options to the user.
- **Select Stage**: The user selects the desired game stage to proceed.
- **Display Game**: The system then displays the game on the frontend for the user to interact with.
- **Play Game**: The user plays the game.
- **Send Game Result**: After the game is played, the result is sent to the backend.
- **Display Result & Social Media Post Option**: The backend processes the game result and displays it to the user along with the option to post the result on social media.
- **Select Option**: The user selects an option for uploading to social media.
- **Display Score & LeaderBoard**: Finally, the backend displays the user's score and updates the leaderboard accordingly.