



MIDDLESEX UNIVERSITY

MAURITIUS

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THE UNDEAD PROTOCOL

Introduction

This report provides a comprehensive overview of "The Undead Protocol," a 3D zombie survival game developed as a web-based application. The project showcases various web development techniques, including user authentication, game mechanics, and data management through local storage. The game's design was inspired by popular first-person shooter games and aims to provide an engaging and interactive experience for players. Through this project, I have gained valuable insights into game development and the intricacies of web technologies.

The Game

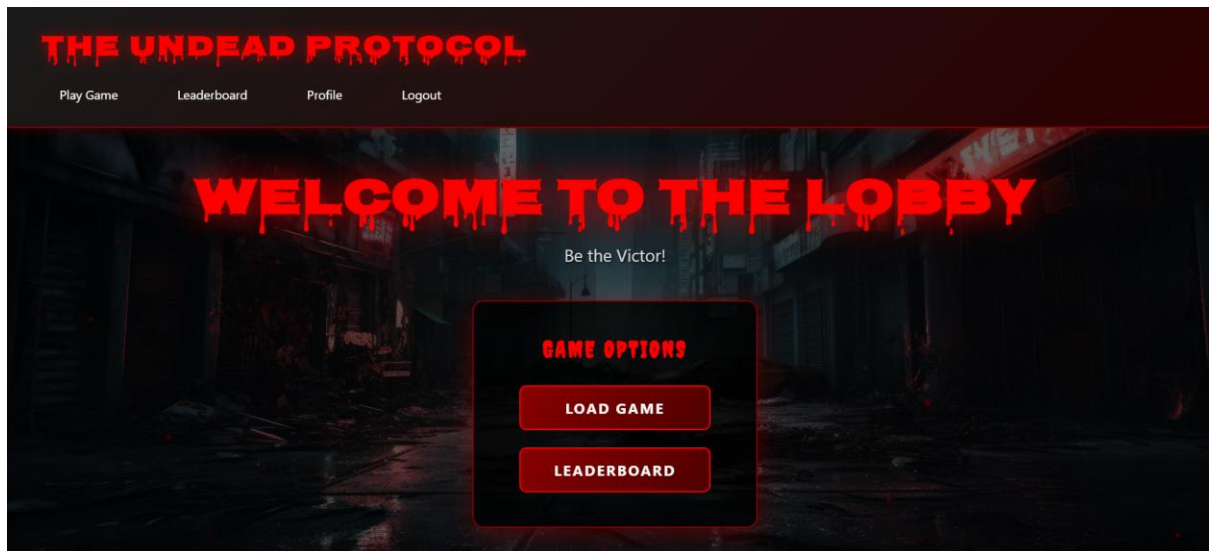
Game Instructions

The objective of "The Undead Protocol" is to survive against waves of zombies using various weapons. Players must manage their health and ammunition while aiming for the highest score possible. Points are generated based on the number of zombies killed, waves completed, and accuracy. The game features different types of zombies, each with unique attributes, which adds to the challenge and excitement. Players can choose from a variety of weapons, each with different damage outputs and firing rates, allowing for strategic gameplay.

The Web-Pages

Homepage (index.html)

The homepage serves as the entry point for users. If a user is logged in, personalized content is displayed, including their username and a welcome message. The page features buttons for navigating to the game page and the scoreboard. Users can toggle between login and signup forms without page redirection, enhancing the user experience by reducing the time taken to switch between forms.



Game Page (game.html)

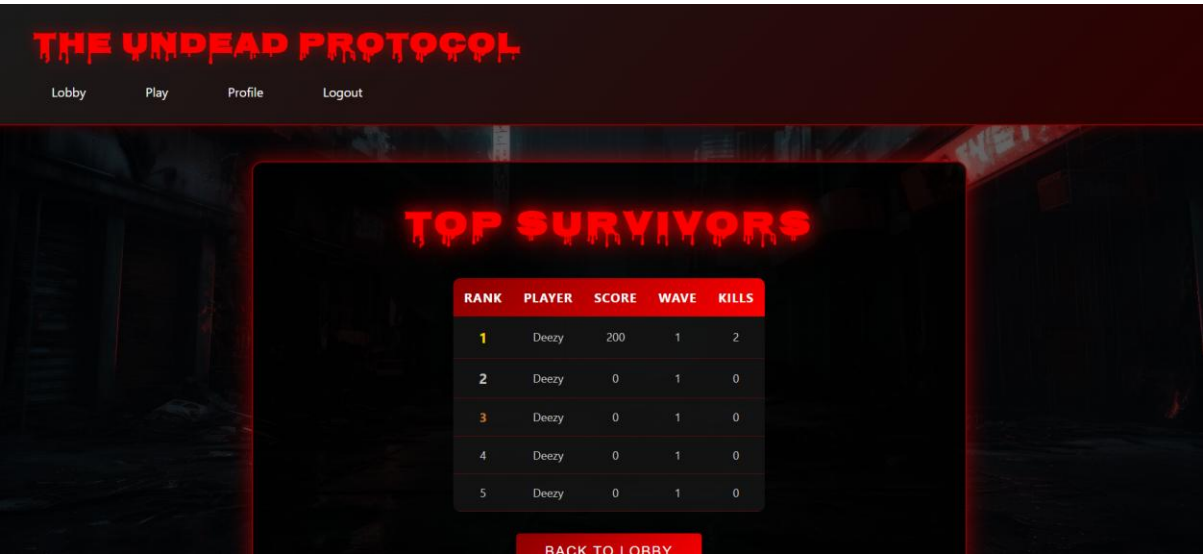
The game page is designed with a full-screen 3D environment powered by Babylon.js. Key elements include the heads-up display (HUD) showing health, ammunition, and score. The page also features complex JavaScript functionalities, such as real-time zombie spawning and collision detection. The game mechanics are designed to be intuitive, allowing players to easily navigate the environment and engage in combat with the zombies. Additionally, sound effects and visual feedback enhance the immersive experience, making gameplay more engaging.



Scoreboard Page (scoreboard.html)

The scoreboard page displays the top players ranked by their scores. It retrieves data from local storage to dynamically generate the leaderboard. Players can view their own scores and

compare them against others. This page encourages competition among players, motivating them to improve their skills and achieve higher scores. The leaderboard is updated in real-time, ensuring that players see the latest rankings as they play.

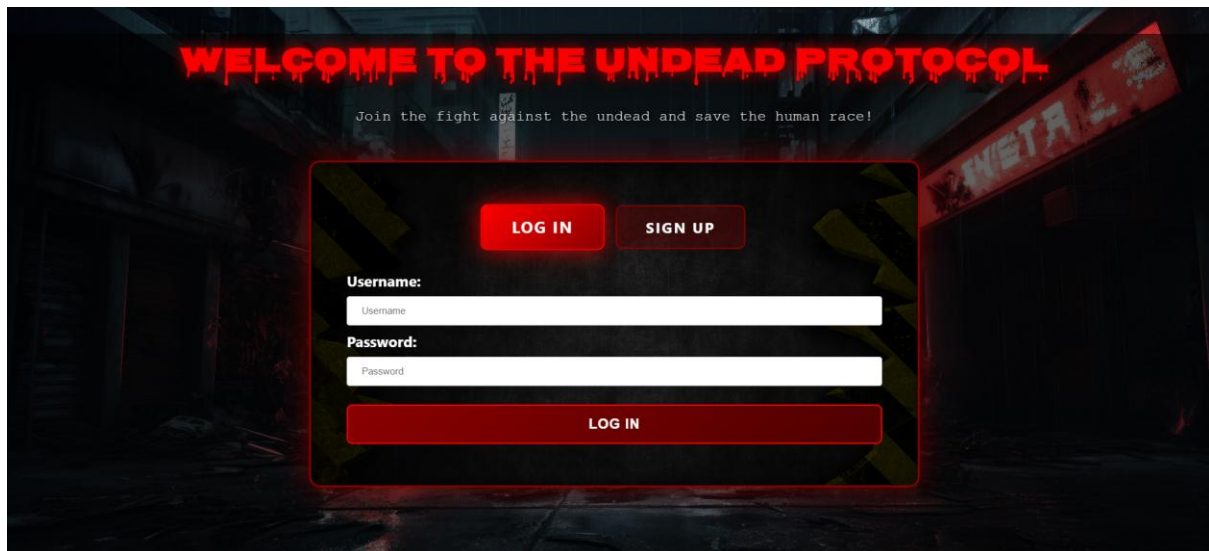


Update and Retrieve Data From Local and Session Storage

Scores are updated in real-time during gameplay and stored in local storage for persistence. The ranking system is based on the scores saved, which are sorted and displayed on the scoreboard page. This functionality allows players to have their progress tracked over multiple sessions, adding an element of continuity to the gaming experience. Data management is handled efficiently, ensuring that players' scores and achievements are reliably stored and retrieved.

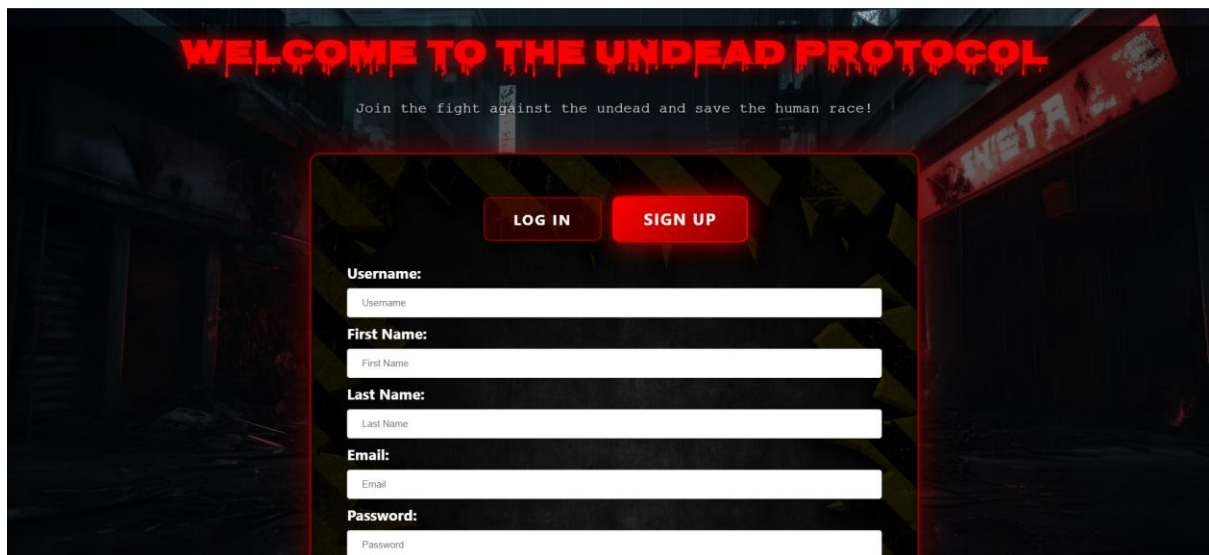
Login Page (login.html)

The login page allows users to authenticate their accounts using their username and password. Error handling is implemented through a combination of HTML5 validation and JavaScript to provide feedback for incorrect credentials and empty fields. This ensures that users have a smooth experience when attempting to log in, reducing frustration and improving overall usability. The design of the login page is clean and straightforward, allowing for quick access to the game.



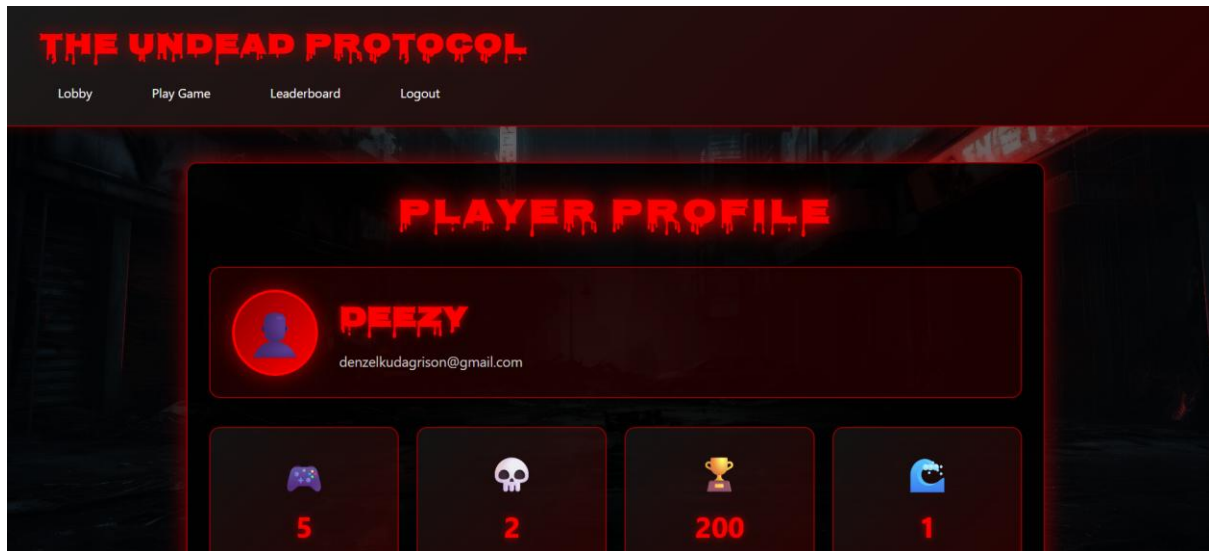
Sign Up Page (signup.html)

The signup page enables new users to create an account. It includes validation for user inputs to ensure data integrity, such as checking password strength and confirming that passwords match. Additional data, like user achievements and inventory, are also stored. This thorough validation process helps maintain a secure environment and prevents potential issues with user accounts. The signup process is designed to be user-friendly, guiding new users through the necessary steps to create their accounts.



Other Pages Implemented (filename.html)

Additional pages may include user profiles or settings, which enhance user experience and engagement. Each page is designed to maintain the overall theme and functionality of the game. These pages provide players with options to customize their experience, including adjusting settings for graphics and sound, which can be crucial for optimizing performance based on different devices.



Difficulties Encountered

Throughout the development of "The Undead Protocol," challenges included finding appropriate libraries, debugging complex JavaScript functionality, and ensuring cross-browser compatibility. These issues were addressed through extensive testing and documentation review. Additionally, learning to implement the Babylon.js library for 3D graphics posed a significant challenge, as it required a deep understanding of 3D rendering concepts and game physics. However, through perseverance and research, I was able to overcome these hurdles and successfully integrate the necessary functionalities into the game.

Conclusion

In conclusion, "The Undead Protocol" demonstrates my ability to implement modern web development techniques, including user authentication, game mechanics, and data management. The project was tested primarily in Google Chrome, ensuring a smooth user experience. Technologies utilized include Babylon.js for 3D graphics, local storage for data persistence, and various JavaScript functionalities for game mechanics. Future improvements could focus on enhancing multiplayer capabilities and integrating a backend database for more

robust data management. Overall, this project has not only improved my technical skills but has also provided valuable insights into the complexities of game development and web applications. I look forward to applying these lessons in future projects and continuing to explore the exciting world of game design and development.