**A Dissertation Interim Report on**

**Online Multiplayer Chess Game**

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**CSY4010 COMPUTING DISSERTATION INTERIM REPORT**

**Online Multiplayer Chess Game**

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**Abstract**

This dissertation report shows the development of an online multiplayer chess game that encompasses a wide range of features aimed at providing an immersive and engaging gaming experience. The project focuses on creating a robust web-based application with an interactive front end inspired by popular chess platforms such as chess.com and lichess.com.

The development process involved implementing various key functionalities to enhance the gameplay experience. These include an account system allowing users to create, log in, and manage their profile information. A comprehensive multiplayer function enables real-time two-player matches, with the added ability for players to spectate ongoing games.

A chat system to facilitate communication between players during online multiplayer matches, fostering a sense of community within the game. Additionally, a rating system was implemented to know the skill of players, enabling fair matchmaking, and fostering healthy competition. Leaderboards were incorporated to showcase the top-ranked players and their achievements.

To provide a competitive edge, the game offers a tournament feature, allowing players to create and participate in chess tournaments. Furthermore, a challenge system enables players to invite specific opponents to engage in head-to-head matches.

For improving gameplay analysis, the game integrates a game analysis feature where players can review and analyze their completed games. The Stockfish API, a powerful chess engine, was utilized to provide comprehensive analysis and insights into player moves.

To cater to different preferences, the game includes time-based games, offering options for rapid and blitz chess. Additionally, puzzle challenges and hints for beginners were incorporated to enhance learning and skill development.

The final product was evaluated through user testing and feedback, confirming the successful implementation of the features. The report concludes by discussing potential areas for future enhancements and expansions, aiming to continuously improve the gaming experience offered by the online multiplayer chess game.

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1. **Introduction**
   1. **Dissertation Background**

Chess has been regarded as a game of strategy, intellect, and timeless appeal. Over the years, its popularity has increased beyond boundaries, competitive players of all ages and backgrounds. With the advancement of technology and the internet, chess player can engage in the game beyond physical boundaries, connecting with opponents from around the world in online multiplayer chess games.

This dissertation presents the background and development of an online multiplayer chess game, aimed at providing a platform for chess player to compete, interact, and enhance their skills in a virtual environment. The project draws inspiration from established chess platforms such as chess.com and lichess.com, which have revolutionized the way chess is played.

The primary motivation behind this project lies in the growing demand for accessible and immersive online gaming experiences. With the hectic pace of modern life, players often seek avenues to indulge in their passion for chess conveniently and flexibly. The rise of online multiplayer gaming has facilitated this demand, allowing players to engage in real-time matches at their own convenience, eliminating the barriers of time and location.

The objective of this project is to develop a feature-rich online multiplayer chess game that not only replicates the classic game's intricacies but also introduces innovative functionalities and an interactive frontend. By combining the strategic depth of chess with modern technologies and engaging features, the game aims to offer an engaging and captivating experience for both casual players and serious enthusiasts.

The project will be implemented using a client-server model, ensuring seamless communication and synchronization between players. The development process will leverage modern web technologies, such as HTML5, CSS3, and JavaScript, to create a user-friendly and accessible web-based application that can be enjoyed on various platforms, including desktops, laptops, and mobile devices.

Key features planned for the game include an account system, allowing players to create and manage their profiles, providing a personalized experience within the game. A comprehensive multiplayer function will enable real-time two-player matches, with the ability for players to spectate ongoing games, fostering a sense of community and camaraderie among chess enthusiasts.

To enhance player interaction, a chat system will be implemented, enabling players to communicate and engage with opponents during matches. This feature aims to replicate the social aspect of traditional chess games, where players can engage in friendly banter or exchange ideas and strategies.

A rating system will be integrated to assign skill ratings to players, allowing for fair matchmaking and providing a sense of progression and achievement. Leaderboards will showcase the top-ranked players, encouraging healthy competition and motivating players to improve their skills.

Additionally, the game will incorporate a tournament feature, enabling players to create and participate in chess tournaments. This competitive element will add depth and excitement to the gameplay, simulating the experience of participating in real-world chess events.

To further enhance the gameplay experience, a challenge system will be implemented, allowing players to invite specific opponents for head-to-head matches. This feature aims to facilitate friendly rivalries and personalized gaming experiences.

For players seeking to improve their skills, a game analysis feature will be included, enabling players to review and analyze their completed games. By integrating the Stockfish API, a powerful chess engine, the game will provide comprehensive analysis and insights into player moves, offering a valuable learning tool for players of all skill levels.

Furthermore, the game will offer time-based games, catering to players who prefer rapid or blitz chess formats. This feature adds variety and accommodates different playing styles and time constraints.

Lastly, the inclusion of puzzle challenges and hints for beginners will foster skill development and provide a learning platform for players who are new to the game. These features aim to make chess more accessible and enjoyable for players of all levels of expertise.

Overall, this project aims to create an online multiplayer chess game that combines the rich history and strategic depth of chess with modern technologies and interactive features. By offering a captivating and immersive gaming experience, it strives to bridge the gap between physical and virtual chess gameplay, catering to the evolving preferences and demands of chess enthusiasts worldwide.

* 1. **Aims and Objectives**

The aim of this dissertation project is to develop an online multiplayer chess game that provides a captivating and immersive gaming experience for chess enthusiasts. The project seeks to leverage modern technologies and innovative features to bridge the gap between physical and virtual chess gameplay, fostering skill development, community engagement, and enjoyment among players.

Objectives:

1. To design and implement a user-friendly web-based application that allows players to engage in real-time two-player matches and spectate ongoing games, creating a multiplayer experience.
2. To develop an account system that enables players to register and manage their profiles, providing a personalized and customized gaming experience within the online multiplayer chess game.
3. To integrate a chat system that facilitates communication between players during matches, exchange of ideas and strategies.
4. To implement a rating system that assigns skill ratings to players, ensuring fair matchmaking and creating a sense of progression and achievement as players to improve their skills.
5. To incorporate leaderboards that showcase the top-ranked players, promote healthy competition, and encouraging players to strive for excellence.
6. To provide a tournament feature that allows players to create and participate in chess tournaments, simulating the experience of real-world chess events.
7. To develop a challenge system that enables players to invite specific opponents for head-to-head matches and friendly rivalries.
8. To integrate a game analysis feature that allows players to review and analyze their completed games, utilizing the Stockfish API to provide comprehensive analysis for skill development and learning.
9. To offer time-based games, including rapid, blitz, and other chess game formats for players with varying time constraints and playing styles.
10. To incorporate puzzle challenges and hints for beginners, providing a learning platform and encouraging skill development for players new to the game.
11. To create an interactive frontend design inspired by popular chess platforms such as chess.com and lichess.com, enhancing the visual appeal and user experience of the online multiplayer chess game.

Through the successful achievement of these objectives, the aim of developing an online multiplayer chess game that engages players for skill development, community interaction, and enjoyment will be realized.