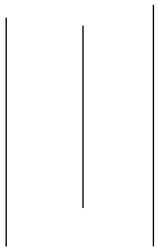
Introductory Programming and Problem Solving

Noughts And Crosses

Individual Coursework



Student ID: 2417335

Student Name: Nima Norbu Sherpa

Word Count: 579

Contents

Abstract

A python application was created to enable players to play tic tac toe versus an AI opponent to build the “Unbeatable Nougats and Crosses” game. The game has an easy-to-use UI with gaming, score-saving and leaderboard watching functions. The major difficulty was putting into practice an AI algorithm that was unbeatable while maintaining a good user experience. The challenges faced during the project, the strategy used to overcome them, and the general conclusions made from the experience are all summarized in this report. The goal was to find a middle ground between a powerful AI system and a seamless gaming experience for the users. The report outlines the tactics used to accomplish this aim and the learnings discovered during the coursework.

Reflective Report

Student Name: Nima Norbu Sherpa

Student ID: 2417335

1. Challenge's Faced in the coursework

A significant challenge was developing a powerful algorithm that could analyze every move that could be made, using the minimax algorithm and alphabet running to determine which move would be the best.

Another difficulty was creating an easy user interface with clear directions and easy navigation. The objective was to create a user-friendly interface that would lead players through the menus and game, improving their overall experience.

It took a great time and attention to detail to integrate file handling capabilities in order to save and load leaderboard scores.

To sum up, overcoming these obstacles required careful planning and painstaking implementation to produce a game with an unmatched AI, an easy user interface and trustworthy leaderboard features.

2. Approach to Completing the Task

A comprehensive planning and study process was conducted prior to game implementation in order to comprehend the principles and operations of the minimax algorithm and alpha beta running. The framework of the game, AI system the user interface and the leaderboard features were all specified in a comprehensive blueprint.

The fundamental game features such as assembling the board, permitting the player movements, and specifying win. Draw circumstances were implemented one step at a time. The AI algorithm was then incorporated and other elements like the menu system and leaderboard functionality were added.

In conclusion, careful planning, iterative development, testing, and active user feedback all contributed to the creation of a successful game with a strong artificial and easy user interface and a useful scoreboard.

3. Lesson Learned

Developing a through understanding of complex algorithms such as minimax and alpha-beta running was essential to creating an AI algorithm that could not be defeated. This encounter improved my ability to solve problem and sharp my algorithm solving skills.

It became clear during the development process how important is to create a well-designed user interface. It became clear that designing a prompt, transparent and simple interface significantly improves user interaction overall.

Working with file handling processes made it clear how crucial it is to incorporate best practices like careful error management and data validation. These procedures are essential for preventing possible problems like data loss or integrity errors..

4. Conclusion

The process of creating the “Unbeatable Noughts and Crosses” game was difficult yet rewarding and it helped me improve my programming abilities. I was especially able to advance my skills in file handling. User interface creation, and algorithm design. Through efficient resolution of development process roadblocks and to best practices, I was able to advance my Python programming Knowledge and proficiency. To sum up, our project produced a fun and fully functional game application in addition to offering valuable learning opportunities.