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Algorithms and Data Structures – Noughts and Crosses Coursework Report

Introduction

The objective that this coursework required to be completed was to create a text-based game of Noughts and Crosses, programmed in C, that may be played between two players. My game allows two players to play a game of Noughts and Crosses and then allows either another game to be played, the replaying of any previous games or the exiting of the game. After a player makes their choice of move in a game and before the other player may make their move, the original player may decide to undo that move and then may redo it as well if they wish.

Design

For the software of my game I used different types of algorithms and data structures. I used a structure to hold the details of each game played, including the players' names and integer arrays of the player's choices of move and of whether it was the X or O player on that go. I also created an array of this structure so as to be able to hold the data of multiple games. I also used a char array for holding the different values of the game board so that they could easily be updated as a player chose their next move, as well as if they undid or redid a move.

Enhancements

With more time, the features that I would have added to my game would have been to be able to redo and undo the moves taken by players back to the initial game play and not just the previously taken move. I would also have liked to have been able to create boards of varying sizes for the game to be played on or an automated player that a solo person could play against.

Critical Evaluation

I believe the array of the game structure that I created was a good feature as it allowed me to be able to overcome a problem with getting whole game data that I was having from using an array of a structure that recorded the data of each move in a game that I had created previously. Something in my code that I think doesn't work that well is that before every game or replay of a game the game board must be reset with the original chars ('1-9'). This resetting must be done as if not the array of chars contains the final board of the previous game and the new game or replay of the game will not work properly.

Personal Evaluation

I am happy with the game I have been able to create. I have learned how to use structures as an array so as to be able to save the data of multiple games and also feel as if I have improved my knowledge of C. While working on getting previous games to be able to be replayed, I struggled with getting each of the players goes to display correctly. However, by spending more time on this portion of the coursework, reviewing previous labs and using the internet to search for specific errors that I was getting I managed to overcome the problems I was having and get this part of the game to work in the way that I had wanted.