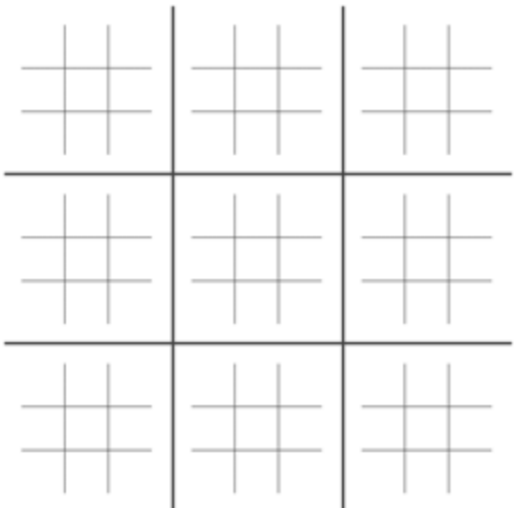
CSE 5305/4300 Final Project Proposal

Cameron Cianci, Christopher Davies, Muhamad Faraj

For our final project we propose to create a game which a player is able to play against an artificial intelligence. This project will reflect the skills learned in this class by allowing for the artificial intelligence to be represented by its own process through forking. Therefore, the game and Artificial Intelligence will be represented by different process control boards (PCBs) and these processes will be separately managed, as was learned in class. This setup mirrors a producer and consumer problem where the user will produce a move, and the artificial intelligence will consume the user's move and then produce a move of its own. Therefore this project will use the lessons learned in class regarding producer-consumer problems.

The game chosen is a modified and more complicated version of TicTacToe, where each square of the TicTacToe board is recursively replaced with another TicTacToe board, as is shown below. One player's move determines which board the other player is able to play on. More information on the mechanics of this game can be found on https://bejofo.net/ttt.



The artificial intelligence used will be a neural network programmed in tensorflow and trained through a genetic algorithm. Each round of training consists of creating many new processes where these neural networks compete. Therefore, each round of training will create a full generation (likely near 100) of new processes which will have to be managed by the OS. These processes will be moved from the running to blocked to ready state queues as was learned in class. The CPU will also have to deal with context switches, as was learned in class, since these processes will run in parallel.