

CS 152 - Lab 001

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- Sign in by emailing me the keyword “break” (the printer is still broken)
- Today we are working on Connect Four (Lab 6)

Connect Four

There are two major parts to Connect Four, each with its own two parts:

1. Win detection
 1. Check the whole board for a win
 2. Check in a line for a win
2. Minimax AI
 1. `maxScoreForComputer` (simulated computer turn)
 2. `minScoreForHuman` (simulated human turn)

Win Detection

The hard part of win detection is already broken down for you: knowing the goal and the steps to achieving it.

- To find a win on the board, we need to check each piece, in each direction.
 - This is made simpler by the other portion:
- To find a win in a direction, we just need to count the matching pieces in a line from our starting piece.
 - Make sure the pieces match, and we're not attempting to look off the board for pieces that don't exist.

Minimax AI

Minimax allows the computer to “think” via 2-step recursion. The computer simulates possible plays by creating a tree of its possible moves and simulating the human player doing the same.

This is accomplished with the two methods:

- `maxScoreForComputer` (simulated computer turn)
- `minScoreForHuman` (simulated human turn)

Each method is basically the same, with the exception of the piece type dropped and the outcome if a win is found, the computer is trying to **maximize** its chances, so it returns high if the simulated computer can win, vice versa if the simulated human succeeds.

These methods call each other (recursion) until they reach their predetermined max depth, or find a win.