CSC 17C project notes

Game: minesweeper, Connect Four, Reversi

Mid-term project: 2 players

Final project: Add AI, game tree, minmax algorithm

Concepts: Linked List, Sort(?), Recursion, Game Tree

1. Minesweeper:
   1. To win: find all mines, the one finds more wins
   2. Too many valid moves for both player and AI, game tree will be extremely huge even though the depth is 2
   3. Easy to validate the input
2. Connect Four:
   1. Ends: four in a row or board is filled
   2. 6x7 board
   3. Tree only 8 possible moves for each player  
      depth 4 = 8^4 = 4096
   4. 在完美玩法中，先手方只要把第一枚棋子放在最中間一行，便保證不敗。後手方在最中間的左或右一行下第一枚棋子，便可達成和局。在左或右最邊一行下第一隻棋子，亦有可能可取得勝利。
   5. less valid moves, can use minmax algorithm and game tree for ai logic
   6. problem: how to assign score for each move
   7. 容易檢查三連，但卡窿較麻煩  
      2 players:為一樣再向該方向檢查，再向反方向  
      用recursion去檢查，3連+空為最高優先度(AI)
3. Reversi:
   1. Ends: all disks are filled or no valid move
   2. 8x8 board
   3. 早中期先佔有利位置，不要在意比分  
      且最低程度要考慮下子後對手下子位置
   4. 後期以吃子為主
   5. 前中 後期目的不同，行動比重需要改變 — 如何定義後期?
   6. 太多策略 e.g control of the center, edge creeping
   7. less valid moves than minesweepers
   8. problem: logic part, how to assign score for each move