TIC TAC TOE

INTRODUCTION:

Tic-tac-toe also known as noughts and crosses is a paper and pencil game for two players, who take turns marking the spaces in a 3 x 3 grid traditionally. The player who succeeds in placing three of their marks in a horizontal, vertical or diagonal row wins the game. It is a zero-sum of perfect information game. This means that it is deterministic, with fully observable environments in which two agents act alternately and the utility values at the end of the game are always equal and opposite. Because of the simplicity of tic-tac-toe, it is often used as pedagogical tool in artificial intelligence to deal with searching of game trees. The optimal move for this game can be gained by using minimax algorithm, where the opposition between the utility functions makes the situation adversarial, hence requiring adversarial search supported by minimax algorithm with alpha beta pruning concept in artificial intelligence.

OBJECTIVES:

1. To develop Artificial intelligence-based tic-tac-toe game for human Vs AI by implementing minimax algorithm with adversarial search concept.

2. To analyse the complexity of minimax algorithm through 4x4 tic tac toe game.

3. To study and implement alpha-beta pruning concept for improved speed of searching the optimal choice in tic-tac toe game.

4. To study optimizing methods for alpha-beta pruning using heuristic evaluation function.

GAME STRATEGY:

Tic-Tac-Toe game has many strategies that can be used. The main point of the strategy is the players have to block the opponent fork, either horizontally, vertically, or diagonally, while the players have to find their own fork to win.

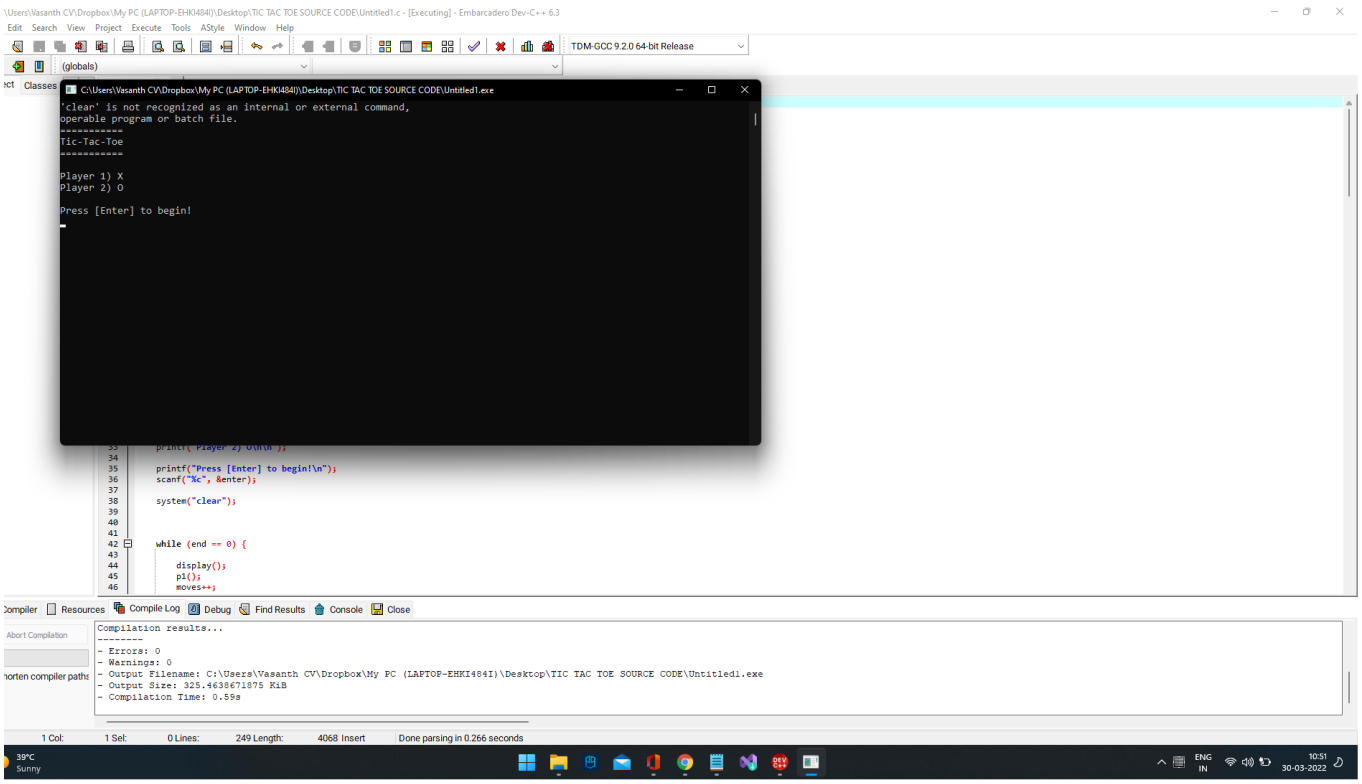
In combinatorial study, suppose “X” moves first, then the game is won as follows

• 91 distinct positions are won by X.

• 44 distinct positions are won by O.

• 3 distinct positions are draw.

OUTPUT:


C:\Users\Vasanth CV\Dropbox\My PC (LAPTOP-EHKI484I)\Desktop\TIC TAC TOE SOURCE CODE\Untitled1.exe
'clear' is not recognized as an internal or external command,
operable program or batch file.
Tic-Tac-Toe
Player 1) X
Player 2) O
Press [Enter] to begin!
printf("Press [Enter] to begin!\n");
scanf("%c", &enter);
system("clear");
while (end == 0) {
display();
p1();
moves++;
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Vasanth CV\Dropbox\My PC (LAPTOP-EHKI484I)\Desktop\TIC TAC TOE SOURCE CODE\Untitled1.exe
- Output Size: 325.4638671875 KiB
- Compilation Time: 0.59s