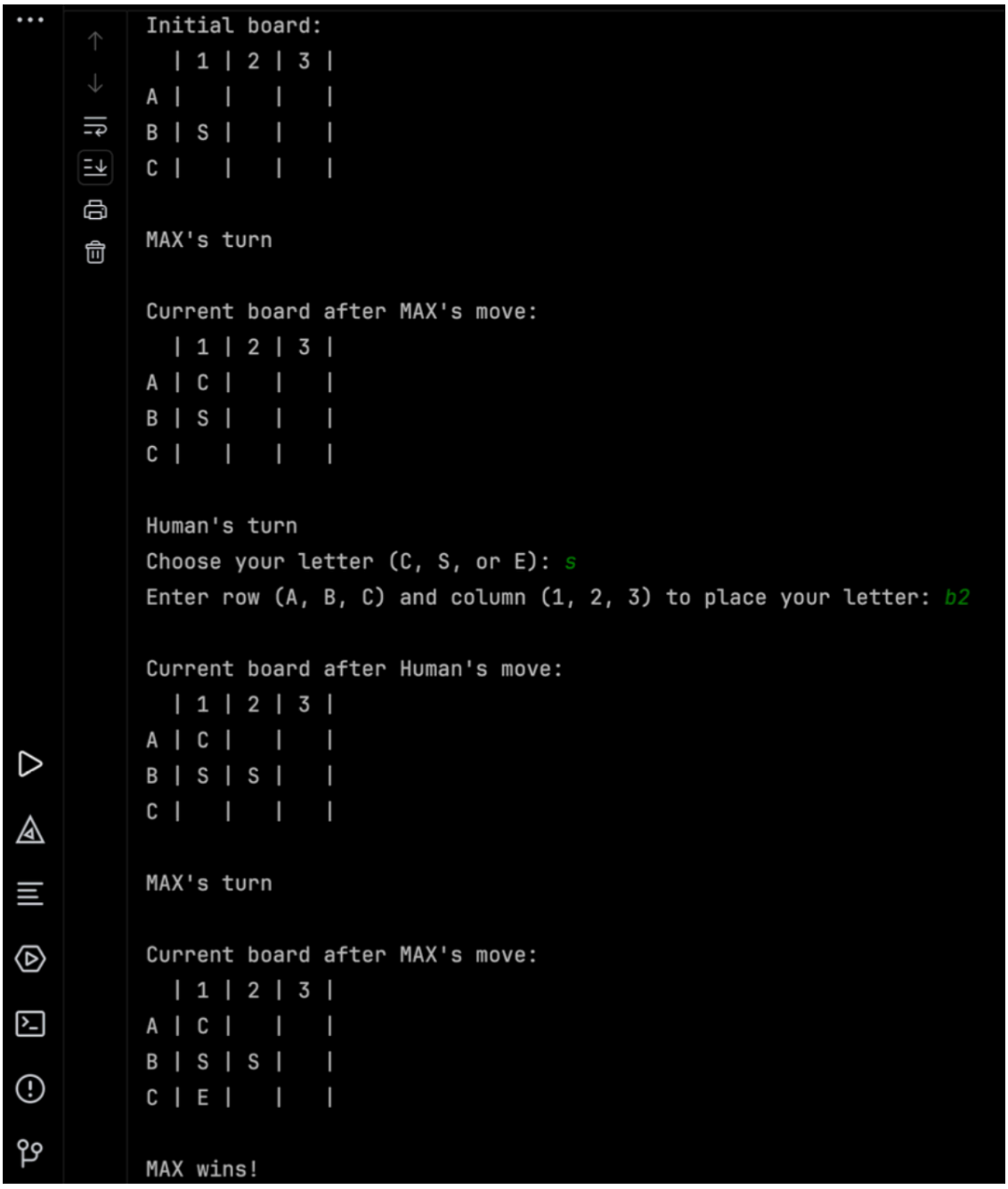
Report

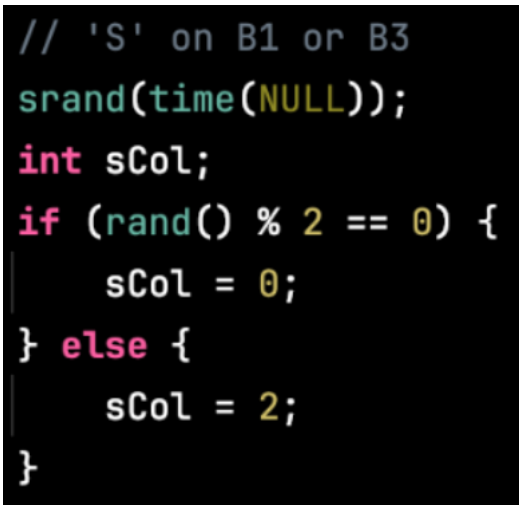
- Game Status Description

This is a game where players take turns placing the letters 'C', 'S' or 'E' on a 3x3 board. The objective is for a player to make the final 'CSE' or 'ESC' triads either horizontally, vertically or diagonally to win the game.



When the game starts, the computer automatically puts the 'S' in either the left or right position of the middle line, using the srand function. We added (time(NULL)) to ensure that the program will give us the 'S' in a different position every time, as before we added it it gave us the same one every time.

This was because the rand() function in C generates sequences of numbers that are pseudorandom, based on a number called a seed. When the seed did not change, rand() returned the same sequence of numbers each time the program was run. By using (time(NULL)) as a seed, we have a moment in time that is different every time the program is executed, thus ensuring that the sequence of numbers that rand() produces will be different each time.



• Definition of Value of Final Statements

In the context of the Minimax algorithm, the final states are represented by the values -1, 0, and +1 to show the outcome of the game from the computer's perspective. The value of the final statements is defined as follows:

1. Victory of MAX: +1

- When player 1 (MAX) wins the game, the final state has a positive result for the Minimax algorithm and is rated +1.

2. MAX's defeat (Human wins): -1

- When player 2 (Human) wins the game, the final state is scored -1. From Minimax's perspective, this is unfavorable because the goal is to maximize MAX's output.

3. Draw: 0
- When the game ends in a draw, the score is 0, which reflects a neutral outcome, as neither player wins nor loses.

```
if (checkWin(board, player: '1')) return 1; // Player 1 wins (MAX)
if (checkWin(board, player: '2')) return -1; // Player 2 wins (Human)
if (checkDraw(board)) return 0; // Draw
```

• Description of the Code

The game code includes the following functions:

1. printBoard: Prints the current game board.

2. checkWin: Checks if there is a winner in the game.

3. checkDraw: Checks if the game has ended in a draw.

4. minimax: Implements the MINIMAX algorithm to find the optimal move for the MAX player.

5. findBestMove: Finds the best move for the MAX player using the MINIMAX algorithm.

6. main: The main function of the program that includes the basic logic of the game, receiving the moves from the players.