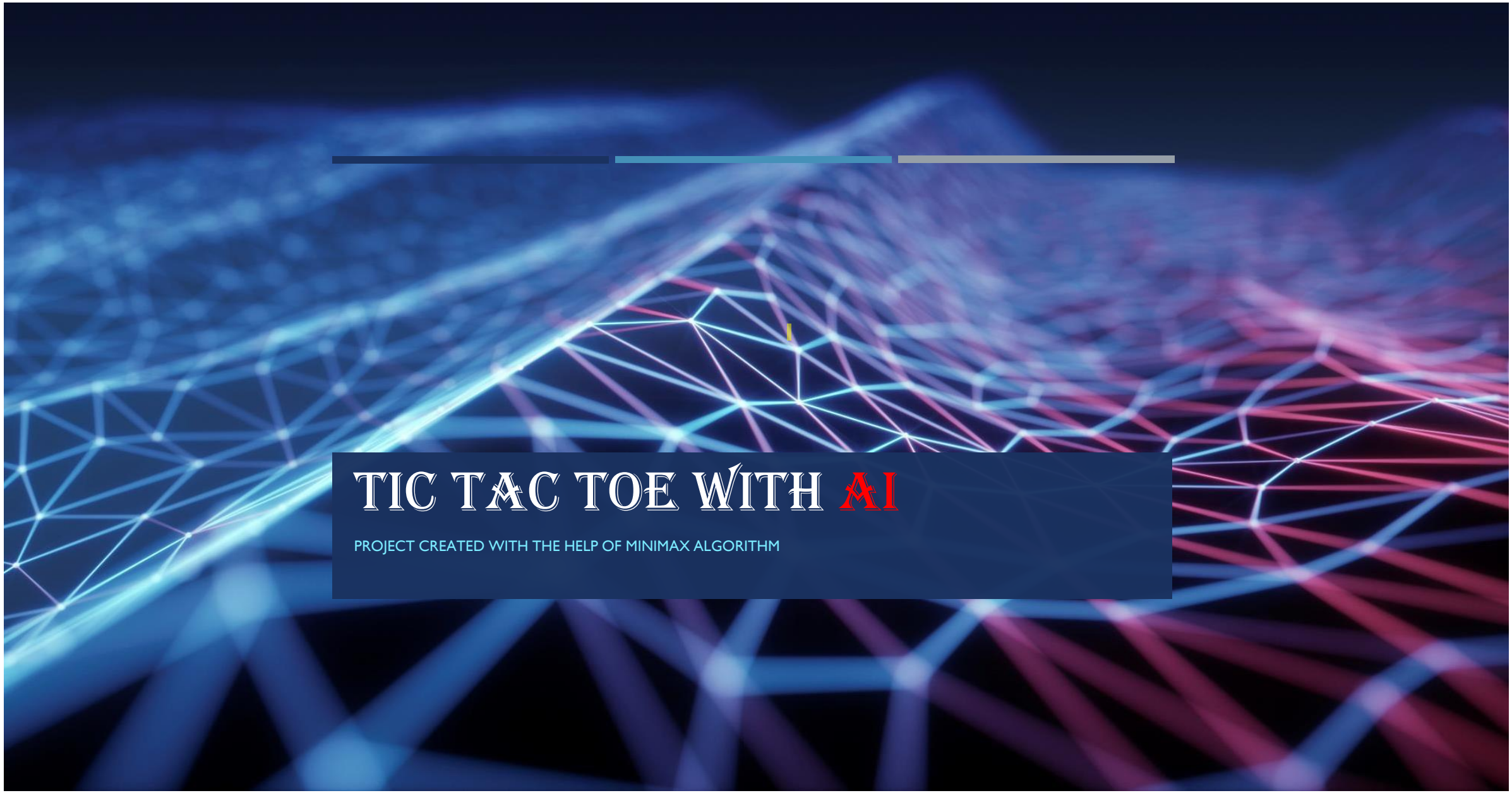
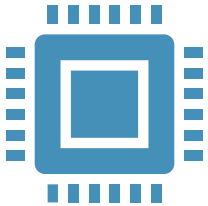
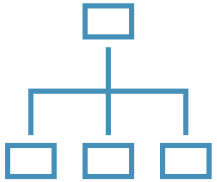

TIC TAC TOE WITH AI
PROJECT CREATED WITH THE HELP OF MINIMAX ALGORITHM



Programming Knowledge



Minimax Algorithm

Code editor

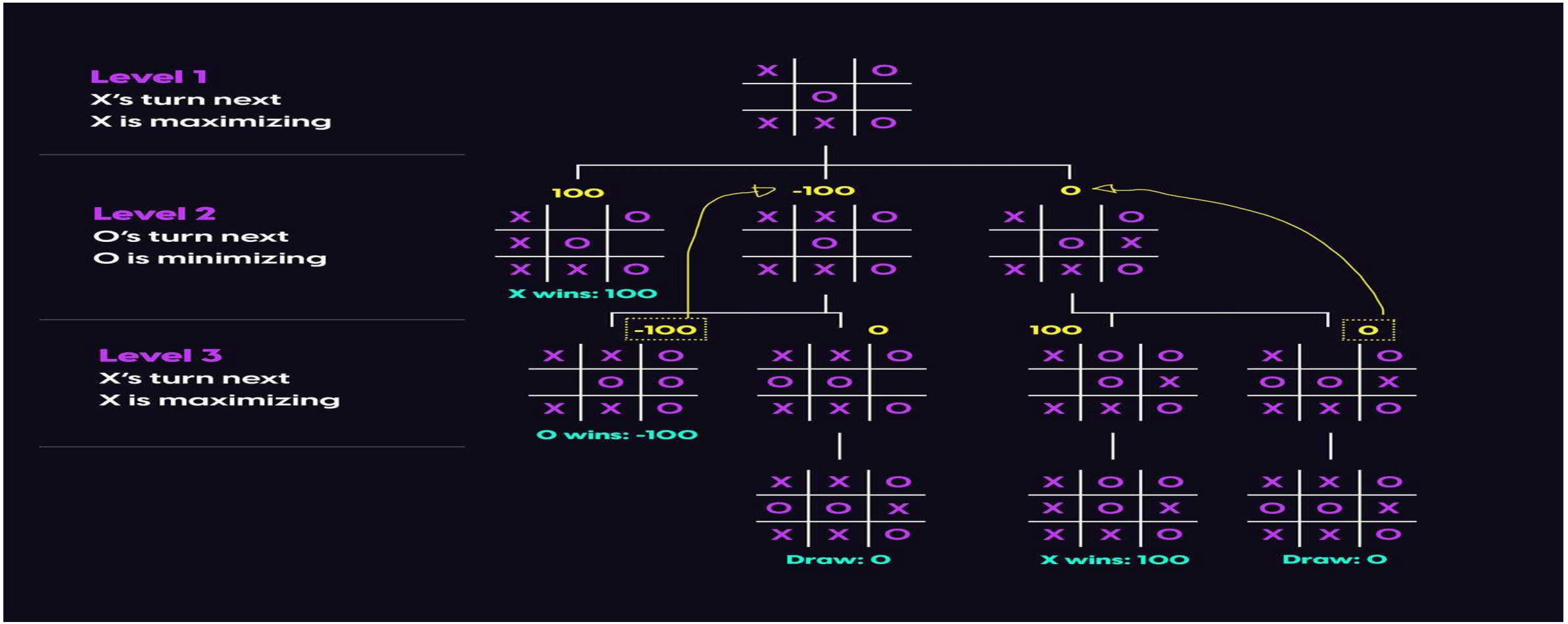
TECH REQUIREMENTS

KNOW ABOUT THE GAME

9*8*7*6*5*4*3*2*1 = 9! (362,880 ways to fill the particular places in board)

That's a total of 3*3*3*3*3*3*3*3*3 = 3^9 = 19,683 different ways the 3x3 grid can be filled in.

GAME TREE EXAMPLE



IMPLEMENTATION OF MINIMAX ALGORITHM

To begin, let's start by defining what it means to play a perfect game of tic tac toe:

If I play perfectly, every time I play I will either win the game, or I will draw the game. Furthermore if I play against another perfect player, I will always draw the game.

How might we describe these situations quantitatively? Let's assign a score to the "end game conditions:"

I win, hurray! I get 10 points!

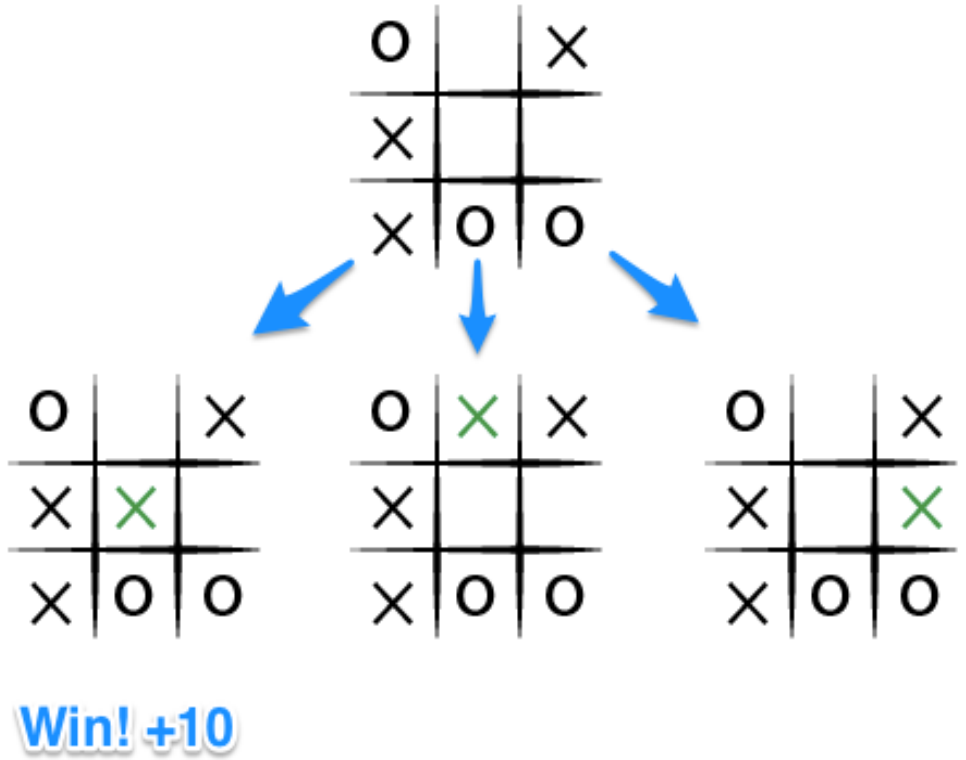
I lose, shit. I lose 10 points (because the other player gets 10 points)

I draw, whatever. I get zero points, nobody gets any points.

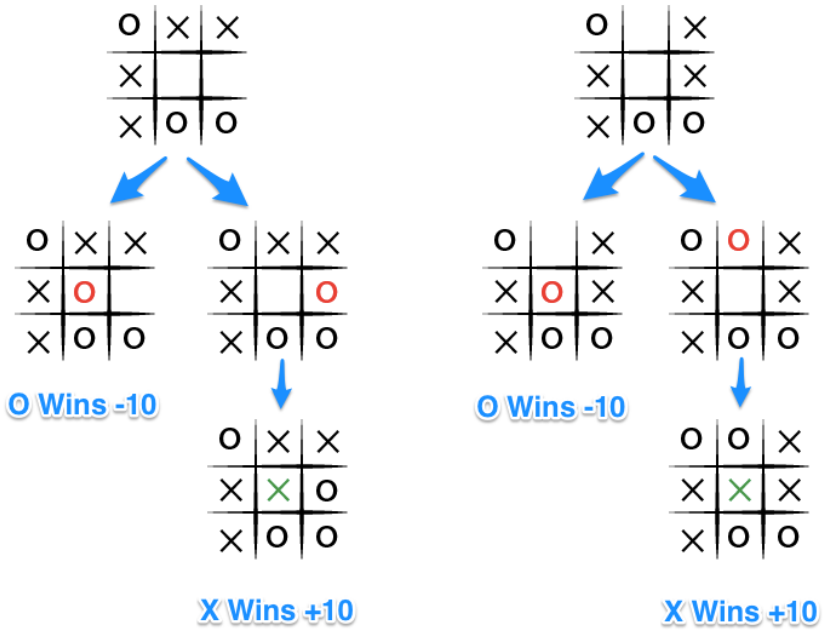
So now we have a situation where we can determine a possible score for any game end state.

- **User Turn(X) : Maximizer**

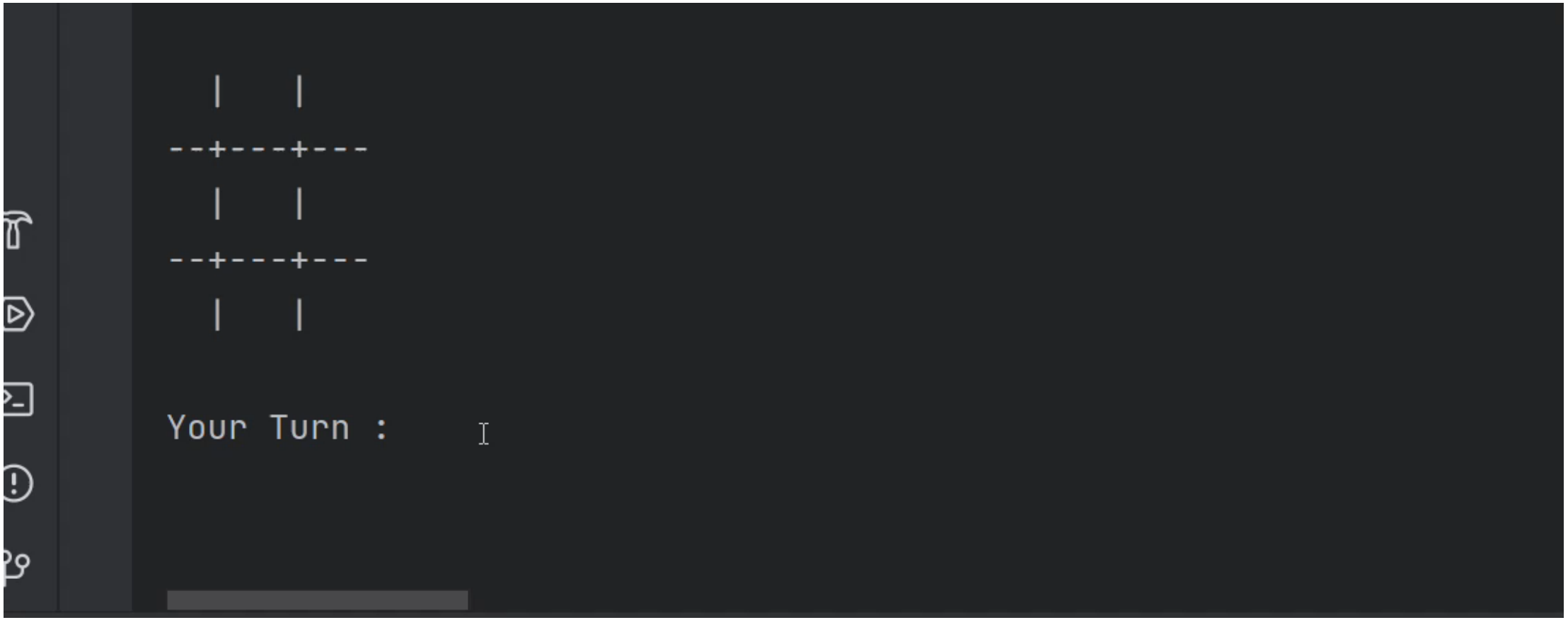
- If the top of this image represents the state of the game I see when it is my turn, then I have some choices to make, there are three places I can play, one of which clearly results in me wining and earning the 10 points. If I don't make that move, O could very easily win. And I don't want O to win, so my goal here, as the first player, should be to pick the maximum scoring move.



IMPLEMENTATION OF MINIMAX ALGORITHM



- **Computer Player(Minimizer)**
- What do we know about O? Well we should assume that O is also playing to win this game, but relative to us, the first player, O wants obviously wants to chose the move that results in the worst score for us, it wants to pick a move that would *minimize* our ultimate score. Let's look at things from O's perspective, starting with the two other game states from above in which we don't immediately win:


| |
--+---+---
| |
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| |
Your Turn :

THANK YOU

CREATED BY: ADARSH MISHRA
COURSE : MCA (LAST YEAR)
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