GE-103

Fun Games

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I. INTRODUCTION:

Have you ever wondered how a chess program is designed for different levels? How a computer performs smarter and smarter moves as the level ups? Minimax algorithm is one of the tools that the computer uses to find best move for itself assuming that the person in front also moves his best.

So, our project is about implementing this algorithm in tic tac toe.

II. LITERATURE REVIEW:

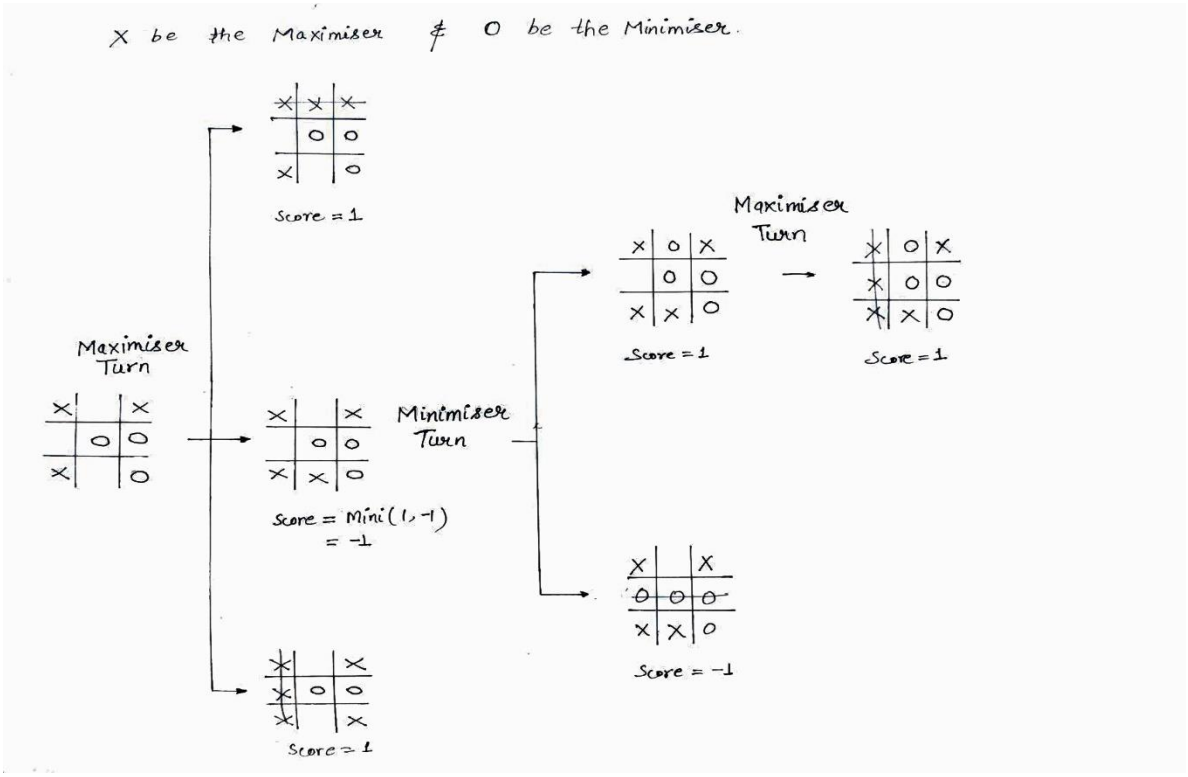
Tic tac toe also called as noughts and crosses game has gone through various phases across the history. In ancient Egypt it was played on tiles and wooden boards. Then in recent world we used to play it with pen and paper. But it was in 1952 for the first time that it was programmed to be played on computer by British scientist Sandy Douglas in form of a video game which he named OXO. This program he wrote on EDSAC as a thesis on human computer interaction at Cambridge University.

This game was played by the AI equipped EDSAC against a human user. The user input was one of the positions of the 9 squares where he wanted to put the nought or the cross. Then it was followed by computer's chance. Accordingly, the state of the game was displayed and got updated on the screen.

III. OBJECTIVE:

The objective of our project is to code a Tic Tac Toe game using python. We are using two lists two store each state of a tic tac toe board. The 3*3 board is initially filled with numbers from 0 to 8 indicating the positions at which crosses and noughts will be inserted. For user we are taking integer input of their choice. For player versus computer, we are developing two modes. One is when computer randomly picks an unfilled place on the board. The other one

is when it picks the most optimal move among all. Our goal is to program it using minimax algorithm as follows.



Here cross is the maximiser and, nought is the minimiser having base scores 1 and -1 respectively. For tie the score is defined zero. Now we backtrack and get the score of previous states. Now we pick the best path, i.e., it neglects the second path having score -1 and choose either of first or third path having score 1. Our goal is to achieve it using a recursive function in our python code.

CONCLUSION:

In this project, we used various concepts of python programming like list and recursion. In addition, we learnt the concept of minimax algorithm and implemented it in our code that concluded in making the computer such intelligent that it never loses the games.

ACKNOWLEDGEMENT:

We are very thankful to our prof. Sudarshan sir who motivate or encourage us to do project and we are thankful also to our teaching assistant Shahid sir to help us in doing project over the games like this Tic Tac Toe and the advance part of it which uses the minimax algorithm also give us the idea of minimax algorithm. This project would have been incomplete without the help of Shahid sir.

REFERENCE: