Computer Science - Haas

Write JavaScript code which will perform the computer move in the game Tic Tac Toe. You will need to come up with a strategy that looks at the game board and has the computer make the best possible move. Note: you only have to change the code in one function.

Before you get started watch this video: <https://youtu.be/vBFiBamo-J4>

Copy the TicTacToe Program below into notepad++ to get started.

You will also need to copy the pictures below into your folder.

|  |  |  |
| --- | --- | --- |
| Save picture as: blank.jpg  K:\ComputerScience2\2016\ComputerScienceJavaScript\used 2017\if else\blank.jpg | Save picture as: tictacx.gif  K:\ComputerScience2\2016\ComputerScienceJavaScript\used 2017\if else\tictacx.gif | Save picture as: tictaco.gif  K:\ComputerScience2\2016\ComputerScienceJavaScript\used 2017\if else\tictaco.gif |

<HTML>

<HEAD> <TITLE>TicTacToe JavaScript Example</TITLE>

<SCRIPT LANGUAGE="JavaScript">

<!--

function Board() {

for (i=0; i < 9; i++) this[i] = 0; return this; }

var board = new Board();

function clearBoard() {for (i=0; i < 9; i++){ board[i] = 0;

document.images[i].src = 'blank.jpg'; } }

function doMove(sqr, plyr)

{ board[sqr] = plyr; if (plyr == 1) {

document.images[sqr].src = 'tictacx.gif';}

else if (plyr == 4) {

document.images[sqr].src = 'tictaco.gif';}

var win = checkWinner();

if (win==1) {

confirm("Good job human! You beat me.\nPlay again?");

clearBoard();}

else if (win==2) {

confirm("I win! Nice try human!\nPlay again?");

clearBoard();} }

function MoveTo(sqr) { doMove(sqr,4) }

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\*\* This is the function that you need to improve. \*\*/

/\*\* Do NOT change the code in any other function! \*\*/

/\*\* You need to come up with a strategy that makes moves \*\*/

/\*\* for the computer. \*\*/

/\*\* \*\*/

/\*\* Spaces on the tictactoe board are numbered 0-8. \*\*/

/\*\* \*\*/

/\*\* 0 | 1 | 2 \*\*/

/\*\* ----------- \*\*/

/\*\* 3 | 4 | 5 \*\*/

/\*\* ----------- \*\*/

/\*\* 6 | 7 | 8 \*\*/

/\*\* \*\*/

/\*\* You can check a position on the board to find out if \*\*/

/\*\* empty, or filled by the player or computer. \*\*/

/\*\* (0=empty, 1=player, 4=computer) \*\*/

/\*\* \*\*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

function computerMove()

{ /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

/\*\*\* --------- Your new code goes below. --------- \*\*\*/

/\*\*\* Replace the sample code below with your code. \*\*\*/

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

if (board[3]==1 && board[4]==1 && board[5]==0) {MoveTo(5)}

else if (board[6]==4 && board[7]==4 && board[8]==0) {MoveTo(8)}

else if (board[0]==0) {MoveTo(0)}

else if (board[1]==0) {MoveTo(1)}

else if (board[2]==0) {MoveTo(2)}

else if (board[3]==0) {MoveTo(3)}

else if (board[4]==0) {MoveTo(4)}

else if (board[5]==0) {MoveTo(5)}

else if (board[6]==0) {MoveTo(6)}

else if (board[7]==0) {MoveTo(7)}

else if (board[8]==0) {MoveTo(8)}

} /\*\*\*\* end of function computerMove() \*\*\*\*/

function clickSqr(sqr) { if (board[sqr] == 0) { doMove(sqr, 1);

computerMove(); } }

function checkLine(a,b,c)

{ var s; s = board[a] + board[b] + board[c];

if (s== 3) return 1; if (s==12) return 2; else return 0; }

function checkWinner() { var r;

r = checkLine(0,1,2); if (r) return r;

r = checkLine(3,4,5); if (r) return r;

r = checkLine(6,7,8); if (r) return r;

r = checkLine(0,3,6); if (r) return r;

r = checkLine(1,4,7); if (r) return r;

r = checkLine(2,5,8); if (r) return r;

r = checkLine(0,4,8); if (r) return r;

r = checkLine(2,4,6); if (r) return r;

return 0; }

</SCRIPT>

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<body>

<CENTER>

<TABLE BORDER=0><TR><TD>

<A HREF="JavaScript: clickSqr(0)">

<IMG WIDTH=100 HEIGHT=100 SRC="blank.jpg"></A></TD><TD>

<A HREF="JavaScript: clickSqr(1)">

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<A HREF="JavaScript: clickSqr(2)">

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<A HREF="JavaScript: clickSqr(3)">

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<A HREF="JavaScript: clickSqr(5)">

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<A HREF="JavaScript: clickSqr(6)">

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<A HREF="JavaScript: clickSqr(8)">

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<FORM>

<INPUT TYPE="button" NAME="resetboard" VALUE="Reset Board" onClick="clearBoard()">

</FORM>

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