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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<FORM>

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

</FORM>

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