Smart Tic-Tac-Toe

What does it do: Human plays computer in Tic Tac Toe. Human selects one of nine buttons, and the computer responds with a move.

How does it work: The computer chooses the best move using Artificial Intelligence (AI). The AI algorithm is as follows:

z

c3y

b3

a3z

a

3

2

1

c

b

b2yz

c2

a2

c1z

b1

a1y

y

Each spot on the Tic Tac Toe board is a button. Each button is denoted by a location address using up to four characters. Letters a-c denote columns, numbers 1-3 denote rows, and letters y and z denote diagonals.

This method of denoting a location address is necessary for the computer to be able to assess positions in the game.

Algorithm:

Variables: (MoveCount = 1)

At the event of the click of a button [by the human]:

1. if MoveCount = 1:

Change text of button to “X”

Add ‘x’ to the button’s address

Change value of MoveCount to 2

1. If MoveCount = 2 AND button ‘b2yz’ is NOT marked with ‘x’:

Change text of button ‘b2yz’ to “O”

Add ‘o’ to the address of button ‘b2yz’

Change value of MoveCount to 3

1. Else if MoveCount = 2 AND button ‘b2yz’ IS marked with ‘x’:

Choose random button

Change text of the button to “O”

Add ‘o’ to the button’s address

Change value of MoveCount to 3

1. While MoveCount = 3:

Change text of button to “X”

Add ‘x’ to the button’s address

Change value of MoveCount to 0

1. While MoveCount = 0:
   1. If human has played at two buttons of either {a, b, c, y, z, 1, 2, 3} AND computer has not played on remaining button

Computer plays at that remaining location

MoveCount = 3

* 1. else if computer has played at two buttons of either {a, b, c, y, z, 1, 2, 3} AND human has not played on remaining button

Computer plays at that remaining location

Computer wins

End

* 1. else if computer has played at one button of either {a, b, c, y, z, 1, 2, 3} AND human has not played on remaining button of that (row, column, diagonal)

Computer plays