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# Ttt Lm: Preliminary Play Method With Interpretation

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1

## Code

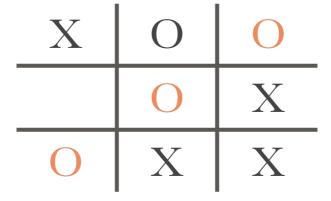
```
1.; SELECT
2. (defun select (lst)
    (nth (random (length lst)) lst)
4.)
5.
6.; SNOC
7. (defun snoc (obj lst)
8. (append lst (list obj))
9.)
10.
11.; PLAY
12. (defmethod play (&aux play avail move)
13.
    (setf play())
      (setf avail '(nw n ne w c e sw s se))
14.
15.
      (dolist (player '(x o x o x o x o x))
16.
         (cond
17.
            ((eq player 'x)
18.
               (setf move (select avail))
19.
               (setf avail (remove move avail))
20.
               (setf play (snoc move play))
21.
            )
22.
            ((eq player 'o)
23.
               (setf move (select avail))
24.
               (setf avail (remove move avail))
25.
               (setf play (snoc move play))
26.
27.
        )
28.
29.
     play
30.)
```

### Demo

```
CSC466 harryscells$ clisp -i ttt1.l
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                                               0000000
                                                           00000
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                                                           00000
Welcome to GNU CLISP 2.49 (2010-07-07) <http://clisp.cons.org/>
Copyright (c) Bruno Haible, Michael Stoll 1992, 1993
Copyright (c) Bruno Haible, Marcus Daniels 1994-1997
Copyright (c) Bruno Haible, Pierpaolo Bernardi, Sam Steingold 1998
Copyright (c) Bruno Haible, Sam Steingold 1999-2000
Copyright (c) Sam Steingold, Bruno Haible 2001-2010
Type :h and hit Enter for context help.
;; Loading file ttt1.l ...
;; Loaded file ttt1.1
Break 1 [2]> (play)
(SE C E N S SW NW NE W)
Break 1 [2]> (play)
(N SE NW W C E S NE SW)
Break 1 [2]> (play)
(SW NE NW W C SE N E S)
Break 1 [2]> (play)
(S E W C N NE SE NW SW)
Break 1 [2]> (play)
(NW SW S E NE W N C SE)
Break 1 [2]> (bye)
Bye.
```

# Analysis

 $Run \ 1$  (Se c e n s sw nw ne w) - l



Run 2

(N SE NW W C E S NE SW) - W

X	X	X
О	О	X
	О	О

 $\label{eq:Run 3} \text{Run 3} \\ \text{(SW NE NW W C SE N E S) - L}$ 

X	X	O
O	X	O
X		O

Run 4
(S E W C N NE SE NW SW) - W

O X O

X O

X X X

Run 5
(NW SW S E NE W N C SE) - W

X

X	X	X
О		О
О	X	

# Results

With the random selection of placement, "X" won 3 times out of 5. For a small sample size, it would seem that this method of playing could be a plausible strategy for winning. As there is a finite number of states the board can have, and because player "X" will always move first, it is possible to predict the outcome (Win, Loose, Draw) based on the first few moves. The number of states that player "X" will win on is a smaller pool that the total number of states possible in the game. Knowing these two things means it is possible for player "X" to play towards one of the states in which it will win. If one player knows all the states in which it will win, then it can be predicted that if that player plays in such a way that it tries to match the game it is playing to the closest possible winning state, then it should have a higher chance of winning.