

Chess AI Player Task Two: Begin modeling the chess board

Abstract: The goal of this task was to add the ability to select certain squares and be able to change what there value is. This is important because the program needs to be able to change what is in each square in order to move pieces. In order to model the board I decided to use an array of length 64, one for each square. By modeling this way it will allow me to define the moves of each piece easier. I used this post in order to help make my decision on how to model the board:

<https://lichess.org/@/likeawizard/blog/review-of-different-board-representations-in-computer-chess/S9eQCAWa>

Demo:

```
CL-USER> (display-current-board)
 8 |-----|
 7 | - - - - - |
 6 | - - - - - |
 5 | - - - - - |
 4 | - - - - - |
 3 | - - - - - |
 2 | - - - - - |
 1 | - - - - - |
   |-----|
   | A B C D E F G H |
NIL
CL-USER> (get-square A1 1)
1
CL-USER> (display-current-board)
 8 |-----|
 7 | - - - - - |
 6 | - - - - - |
 5 | - - - - - |
 4 | - - - - - |
 3 | - - - - - |
 2 | - - - - - |
 1 | * - - - - |
   |-----|
   | A B C D E F G H |
NIL
CL-USER> (get-square C7 1) (get-square D7 1) (get-square E7 1)
1
CL-USER> (display-current-board)
 8 |-----|
 7 | - - * * * - - |
 6 | - - - - - |
 5 | - - - - - |
 4 | - - - - - |
 3 | - - - - - |
 2 | - - - - - |
 1 | * - - - - |
   |-----|
   | A B C D E F G H |
NIL
```

```

CL-USER> (get-square F3 1)
1
CL-USER> (get-square A1 0)
0
CL-USER> (display-current-board)

 8 |-----|
 7 | - * * * - |
 6 | - - - - - |
 5 | - - - - - |
 4 | - - - - - |
 3 | - - * - - |
 2 | - - - - - |
 1 | - - - - - |
   |-----|
   A B C D E F G H
NIL
CL-USER>

```

Code:

```

.....
;;Making the rank and file notation into 0...63

```

```

(setf A1 0) (setf B1 1) (setf C1 2) (setf D1 3) (setf E1 4) (setf F1 5) (setf G1 6) (setf H1 7)
(setf A2 8) (setf B2 9) (setf C2 10) (setf D2 11) (setf E2 12) (setf F2 13) (setf G2 14) (setf H2 15)
(setf A3 16) (setf B3 17) (setf C3 18) (setf D3 19) (setf E3 20) (setf F3 21) (setf G3 22) (setf H3
23)
(setf A4 24) (setf B4 25) (setf C4 26) (setf D4 27) (setf E4 28) (setf F4 29) (setf G4 30) (setf H4
31)
(setf A5 32) (setf B5 33) (setf C5 34) (setf D5 35) (setf E5 36) (setf F5 37) (setf G5 38) (setf H5
39)
(setf A6 40) (setf B6 41) (setf C6 42) (setf D6 43) (setf E6 44) (setf F6 45) (setf G6 46) (setf H6
47)
(setf A7 48) (setf B7 49) (setf C7 50) (setf D7 51) (setf E7 52) (setf F7 53) (setf G7 54) (setf H7
55)
(setf A8 56) (setf B8 57) (setf C8 58) (setf D8 59) (setf E8 60) (setf F8 61) (setf G8 62) (setf H8
63)

```

```

(defmethod createEmptyBoard ()
  (format t "~% |-----|" )
  (format t "~%8 |-----|" )
  (format t "~%7 |-----|" )
  (format t "~%6 |-----|" )
  (format t "~%5 |-----|" )
  (format t "~%4 |-----|" )
  (format t "~%3 |-----|" )
  (format t "~%2 |-----|" )
  (format t "~%1 |-----|" )
  (format t "~% |-----|" )
  (format t "~%X  A B C D E F G H ~%"))

```

```

(setf the-board (make-array 64))

```

```

(defmethod print-board ()
  (dotimes (i (length the-board))
    (format t "element ~A: ~A~%" i (aref the-board i))))

```

```

(defun get-symbol (i)
  (cond ((= i 1) '* )
        ((= i 0) '-)))

```

```

(defmethod test-board-print ()
  (format t "square 56: ~A square 57: ~A" (get-symbol (aref the-board 56)) (get-symbol (aref
the-board 57))))

```

```

(defmethod print-rank-8 ()
  (format t "8 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 56)) (get-symbol
(aref the-board 57)) (get-symbol (aref the-board 58)) (get-symbol (aref the-board 59))
(get-symbol (aref the-board 60)) (get-symbol (aref the-board 61)) (get-symbol (aref the-board
62)) (get-symbol (aref the-board 63))))

```

```

(defmethod print-rank-7 ()
  (format t "7 | ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 48)) (get-symbol
(aref the-board 49)) (get-symbol (aref the-board 50)) (get-symbol (aref the-board 51))
(get-symbol (aref the-board 52)) (get-symbol (aref the-board 53)) (get-symbol (aref the-board
54)) (get-symbol (aref the-board 55))))

```

```
(defmethod print-rank-6 ()
  (format t "6 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 40)) (get-symbol
(aref the-board 41)) (get-symbol (aref the-board 42)) (get-symbol (aref the-board 43))
(get-symbol (aref the-board 44)) (get-symbol (aref the-board 45)) (get-symbol (aref the-board
46)) (get-symbol (aref the-board 47))))
```

```
(defmethod print-rank-5 ()
  (format t "5 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 32)) (get-symbol
(aref the-board 33)) (get-symbol (aref the-board 34)) (get-symbol (aref the-board 35))
(get-symbol (aref the-board 36)) (get-symbol (aref the-board 37)) (get-symbol (aref the-board
38)) (get-symbol (aref the-board 39))))
```

```
(defmethod print-rank-4 ()
  (format t "4 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 24)) (get-symbol
(aref the-board 25)) (get-symbol (aref the-board 26)) (get-symbol (aref the-board 27))
(get-symbol (aref the-board 28)) (get-symbol (aref the-board 29)) (get-symbol (aref the-board
30)) (get-symbol (aref the-board 31))))
```

```
(defmethod print-rank-3 ()
  (format t "3 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 16)) (get-symbol
(aref the-board 17)) (get-symbol (aref the-board 18)) (get-symbol (aref the-board 19))
(get-symbol (aref the-board 20)) (get-symbol (aref the-board 21)) (get-symbol (aref the-board
22)) (get-symbol (aref the-board 23))))
```

```
(defmethod print-rank-2 ()
  (format t "2 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 8)) (get-symbol (aref
the-board 9)) (get-symbol (aref the-board 10)) (get-symbol (aref the-board 11)) (get-symbol (aref
the-board 12)) (get-symbol (aref the-board 13)) (get-symbol (aref the-board 14)) (get-symbol
(aref the-board 15))))
```

```
(defmethod print-rank-1 ()
  (format t "1 | ~A ~A ~A ~A ~A ~A ~A ~A |" (get-symbol (aref the-board 0)) (get-symbol (aref
the-board 1)) (get-symbol (aref the-board 2)) (get-symbol (aref the-board 3)) (get-symbol (aref
the-board 4)) (get-symbol (aref the-board 5)) (get-symbol (aref the-board 6)) (get-symbol (aref
the-board 7))))
```

```
(defmethod display-current-board ()
  (format t "~% |-----|")
  (terpri))
```

```
(print-rank-8)
(terpri)
(print-rank-7)
(terpri)
(print-rank-6)
(terpri)
(print-rank-5)
(terpri)
(print-rank-4)
(terpri)
(print-rank-3)
(terpri)
(print-rank-2)
(terpri)
(print-rank-1)
( format t "~% |-----|" )
( format t "~%  A B C D E F G H ~%" )
```

```
(defun get-square (square sym)
  (setf (aref the-board square) sym))
```