Kuncheng Feng CSC 466 Presentation

Improved Statistics

Abstract

The "getStatistics" function under "Main.l" has been improved to keep track of a few more values, including average number of turns, and average shots achieved by each player.

Code

Due to the time constraints on presentation time, only the top level code is shown, the functions do exactly what its name suggests, and the full code can be found under the "snapshot" folder where this PDF resides.

The "getStatistics" function asks the user for what types of AI they should play against each other, and asks for how many games they should play.

It then accumulates the statistics gathered from those games and displays them.

```
(defun getStatistics(&aux p1Type p2Type iterations counter gameStatistics)
  ; Get user input
  (format t "Available AIs: ~%")
  (dotimes (n (length *AIs*))
      (format t "~A - ~A~%" (+ n 1) (nth n *AIs*))
  )
  (format t "Enter a corresponding number to choose AI 1: ")
  (setf p1Type (read))
  (format t "Enter a corresponding number to choose AI 2: ")
  (setf p2Type (read))
  (format t "Enter the number of iterations: ")
  (setf iterations (read))
  ; Some setup
  (setf gameStatistics (newGameStatistics))
  (format t "Simulating games ...~%~%")
  (setf counter 0)
```

The "quickGame" function asks for what type of players are desired, set up the players, and have them play one game. Then it returns the result of that game.

```
(defun quickGame(player1Type player2Type &aux player1 player2 ships1
ships2 board1 board2 turns winner player1Hits player2Hits)
    (setf board1 (newBoard 10 10))
    (setf board2 (newBoard 10 10))
    (setf ships1 (reverse (generateShips)))
    (setf ships2 (reverse (generateShips)))
    (setf player1 (createPlayer player1Type board1 board2 ships1))
    (setf player2 (createPlayer player2Type board2 board1 ships2))
    (playerPlaceShips player1)
    (playerPlaceShips player2)
    (setf winner nil)
    (setf turns 0)
    (loop while (equal winner nil) do
        (playerOpenFire player1)
        (playerOpenFire player2)
        (setf turns (+ turns 1))
```

```
(setf winner (getWinner player1 player2))
)
; Count the hits achieved on the opponent
(setf player1Hits (countHits ships2))
(setf player2Hits (countHits ships1))
(newGameResult turns winner player1Hits player2Hits)
```

Demo

NIL

```
[2]> (getStatistics)
Available AIs:
1 - RANDOMPLAYER
2 - RANDOMPLAYERPLUS
3 - RANDOMPLAYERPLUSPLUS
4 - TIERLISTPLAYER
5 - TIERLISTPLAYERPLUS
6 - TIERLISTPLAYERPLUSPLUS
Enter a corresponding number to choose AI 1: 1
Enter a corresponding number to choose AI 2: 2
Enter the number of iterations: 100
Simulating games ...
50 games played...
100 games played...
Game statistics:
Number of games played: 100
Average number of turns: 65.916824
Player 1 victories: 2
Player 2 victories: 98
Draws: 0
Average hits achieved by player 1: 10.761697
Average hits achieved by player 2: 17.0
```

The full statistics of each players will be shown on the next presentation.