Assignment - 2 Report

Following table shows the record of the matches played with the computer using both the algorithms. Computer will always either win or draw if the game is implemented with minmax.

This table shows the data with reference to human play.

Algorithm/ State	Won	Loss	Draw	Total Played	Remark
Minmax	0	4	6	10	From this we can infer that Minmax never loses; it means it is always playing optimally. And reinforcement is making mistakes; it means it seems more like a human being. If the Turing test is performed then reinforcement will seem human.
Reinforcement	4	3	3	10	

I used alpha equals to 0.312 for reinforcement learning. Initially I have done learning once. For saturation point I have called the learning function 10000 thousand times for better learning of values. In thousand cycles each time I passed the initial state after choosing randomly from the created tree for better learning.

I didn’t have to use any technique to reduce the size of the json file since it is already a low size(194 kb). Since I have stored states as a string of characters.

Table : 1 Played using Min-Max

Showing the shots of game played with computer using minmax algorithm: These are with respect to human players. Colored part shows the winning state. Number shows the order of moves. ‘X’ is computer and ‘O’ is human.

Case 1(lose)			Case 2(draw)			Case 3(lose)		
1O	3O	4X	2X	7O	6X	5O	-	6X
6X	2X	8X	4X	1O	3O	-	2X	-
5O	-	7O	5O	8X	9O	4X	3O	1O

Table : 2 Played using Reinforcement Learning

Showing the shots of a game played with a computer using Reinforcement algorithm: These are with respect to the human player. Colored part shows the winning state. Number shows the order of moves. ‘X’ is computer and ‘O’ is human.

Case 1(win)			Case 2(win)			Case 3(lose)		
1O	2X	6X	7O	2X	3O	4X	-	-
7O	3O	-	-	1O	6X	3O	2X	-
5O	-	4X	4X	-	5O	1O	5O	6X