Documentation: AI Programming Assignment 1

Game Playing Strategies

Algorithm	Input Tree	Output	Pruning
Minimax	(((1 (4 7)) (3 ((5 2) (2 8 9) 0 -2) 7 (5 7 1)) (8 3)) (((8 (9 3 2) 5) 2 (9 (3 2) 0)) ((3 1 9) 8 (3 4))))	MAX value of 5 at position (5 2) MAX value of 8 at position (2 8 9) MIN value of 0 at position (5 2) (2 8 9) 0 -2) MAX value of 7 at position (3 ([5 2) (2 8 9) 0) 7 (5 7 1]) MAX value of 8 at position (8 3) MAX value of 9 at position (9 3 2) MIN value of 0 at position (9 (3 2) 0) MIN value of 3 at position (31 9) MAX value of 8 at position ([3 1 9) 8 (3 4])	
	((8 (7 9 8) 4) (((3 6 4) 2 1) ((6 2 9) 4 7 (6 4 5))))	MAX value of 9 at position (7 9 8) MIN value of 2 at position (6 2 9) MIN value of 3 at position (3 6 4) MAX value of 7 at position (6 2 9) 4 7 (6 4 5])	
	(((1 4) (3 (5 2 8 0) 7 (5 7 1)) (8 3)) (((3 6 4) 2 (9 3 0)) ((8 1 9) 8 (3 4))))	MIN value of 2 at position (5 2 8 0) MAX value of 7 at position 3 (5 2 8 0) 7 (5 7 1]) MAX value of 8 at position (8 3) MIN value of 3 at position (3 6 4) MIN value of 3 at position (9 3 0) MIN value of 1 at position (8 1 9) MAX value of 8 at position (8 1 9) 8 (3 4])	
	((4 (7 9 8) 8) (((3 6 4) 2 6) ((9 2 9) 4 7 (6 4 5))))	MIN value of 2 at position (5 2 8 0) MAX value of 7 at position 3 (5 2 8 0) 7 (5 7 1]) MAX value of 8 at position (8 3) MIN value of 3 at position (3 6 4) MIN value of 3 at position (9 3 0) MIN value of 1 at position (8 1 9) MAX value of 8 at position (8 1 9) 8 (3 4])	
	(5 (((4 7 -2) 7) 6))	MIN value of 4 at position (4 7 -2)	
Alpha Beta Pruning	(((1 (4 7)) (3 ((5 2) (2 8 9) 0 -2) 7 (5 7 1)) (8 3)) (((8 (9 3 2) 5) 2 (9 (3 2) 0)) ((3 1 9) 8 (3 4))))	The tree has the following Alpha and Beta Values: 5 Solution path is: 2 1 1 3	Pruning will occur for MAX value of 5 at position (5 2) Pruning will occur for MAX value of 8 at position (2 8 9) Pruning will occur for the MIN value of 0 at position (5 2) (2 8 9) 0 -2) Pruning will occur for MAX value of 7 at position 3 ([5 2) (2 8 9) 0) 7 (5 7 1) Pruning will occur for MAX value of 8 at position (8 3) Pruning will occur for MAX value of 9 at position (9 3 2) Pruning will occur for the MIN value of 0 at position (9 (3 2) 0) Pruning will occur for the MIN value of 3 at position (31 9) Pruning will occur for MAX value of 8 at position ([3 1 9) 8 (3 4])
	((8 (7 9 8) 4) (((3 6 4) 2 1) ((6 2 9) 4 7 (6 4 5))))	The tree has the following Alpha and Beta Values: 4 Solution path is: 1 3	Pruning will occur for MAX value of 9 at position (7 9 8) Pruning will occur for the MIN value of 3 at position (3 6 4) Pruning will occur for the MIN value of 2 at position (6 2 9)

			Pruning will occur for MAX value of 7 at position (6 2 9) 4 7 (6 4 5))
	(((1 4) (3 (5 2 8 0) 7 (5 7 1)) (8 3)) (((3 6 4) 2 (9 3 0)) ((8 1 9) 8 (3 4))))	The tree has the following Alpha and Beta Values: 4 Solution path is: 1 1 2	Pruning will occur for the MIN value of 2 at position (5 2 8 0) Pruning will occur for MAX value of 7 at position 3 (5 2 8 0) 7 (5 7 1)) Pruning will occur for MAX value of 8 at position (8 3) Pruning will occur for the MIN value of 3 at position (3 6 4) Pruning will occur for the MIN value of 3 at position (9 3 0) Pruning will occur for the MIN value of 1 at position (8 1 9) Pruning will occur for MAX value of 8 at position (8 1 9) 8 (3 4))
	((4 (7 9 8) 8) (((3 6 4) 2 6) ((9 2 9) 4 7 (6 4 5))))	The tree has the following Alpha and Beta Values: 4 Solution path is: 1 1 2	Pruning will occur for the MIN value of 2 at position (5 2 8 0) Pruning will occur for MAX value of 7 at position 3 (5 2 8 0) 7 (5 7 1)) Pruning will occur for MAX value of 8 at position (8 3) Pruning will occur for the MIN value of 3 at position (3 6 4) Pruning will occur for the MIN value of 3 at position (9 3 0) Pruning will occur for the MIN value of 1 at position (8 1 9) Pruning will occur for MAX value of 8 at position ((8 1 9) 8 (3 4))
	(5 (((4 7 -2) 7) 6))	The tree has the following Alpha and Beta Values: 6 Solution path is: 2 2	Pruning will occur for the MIN value of 4 at position (4 7 -2)