HOW TO EVALUATE STATIC EVALUATION FUNCTION?

Example given for Tic-Tac-Toe game

Example given for "Mini-Four" problem

Suggested to check static evaluation function for chess game

Alpha-beta (N, alpha, beta)

If N is a terminal node
    return eval(N)
If N is a MaxNode
    for each child c of N
        alpha ← MAX (alpha, Alpha-beta (c, alpha, beta))
        if alpha>= beta then return beta [this is called beta cutoff]

If N is a MinNode
    for each child c of N
        beta ← MIN (beta, Alpha-beta (c, alpha, beta))
        if alpha>=beta then return alpha [this is called alpha cutoff]

Examples given for alpha-beta pruning

It is important to understand how for each iteration alpha-beta values are changing

In maxnode, only alpha beta changes

In minnode, only beta value changes

Initialization, alpha= -INF and beta= +INF

Examples given how to draw "SEARCH TREE" for A* algorithm

When heuristics are inadmissible or not consistent?

It is important to understand what does "admissible" and "consistent" heuristics mean intuitively.

Sample QS-1: If one search heuristic h1(s) is admissible and other heuristic h2(s) is not admissible, then h3(s)=min(h1(s), h2(s)) – will it be admissible or not?

Sample QS-2: alpha beta pruning can alter the computed minimax value of the root of a game tree. "FALSE". It never changes the solution, it only helps to prune some branches of the game tree to make the search more efficient.

PRACTICE QS (DRAW THE GAME TREE AND FIND THE SOLUTION)

Cars sold by Tesla, 2024 forecast			Volt Motors: Eco-friendly	Volt Motors: High performance
Tesla	Eco-friendly	Europe	500	800
		North America	300	200
	High performance	Europe	100	900
		North America	600	400

- You're now tasked with helping Tesla maximize its 2024 electric car sales. Suppose that exactly 1 million cars will be sold, and no other companies compete in this market, meaning every sale made by Tesla is a missed sale for Volt Motors, and vice versa.
- Tesla has two key decisions to make: whether its new Model E will have a high-performance or eco-friendly engine, and whether its marketing will be focused in Europe or North America. Tesla's decision will be influenced by Volt Motors' choice of engine type for its Volt X model. Market analysis predicts Tesla will sell the following numbers of cars given the two companies' choices.

You find out that Tesla can choose its marketing location after Volt Motors decides on its Volt X engine type. You want to help Tesla maximize sales by using a Minimax algorithm, and you suggest the following order of decision-making, knowing that Volt Motors will attempt to minimize Tesla's sales: Tesla chooses engine type, Volt Motors chooses engine type, then Tesla chooses marketing location.

Assume when drawing decision nodes in a layer that the state resulting from a choice of an eco-friendly engine is to the left of a choice of a high-performance engine, and that a state resulting from a choice of Europe is to the left of a choice of North America. Between nodes, label the links with the decision choices.