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Hw 8

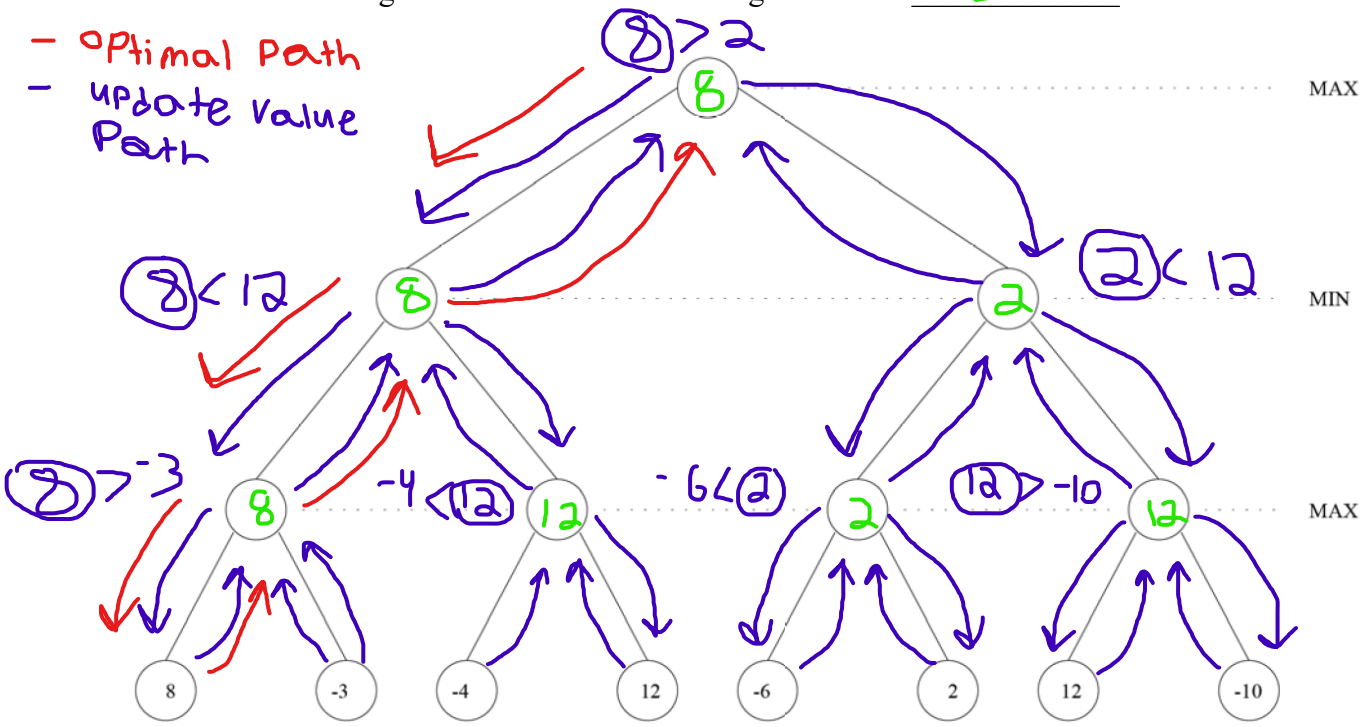
Topics Covered: This assignment covers: Game Search.

Must be done independently.

Complete the following problems/answer the following questions.

Problem 1 (Minimax Search): Perform the Minimax Search algorithm on the following game tree, specifically doing the following:

a. For every state in the game tree, indicate its game-theoretic value. Write the game theoretic values inside the nodes of the tree.
b. Indicate the path (from the root of the game to a leaf) that would be taken if both players made optimal decisions throughout the game (you can indicate the path by drawing arrows on the relevant edges).
c. What is the game-theoretic value for the game itself? 8



Problem 2 (Alpha Beta Pruning): For the game tree that follows, perform Alpha Beta Pruning. Specifically, do the following:

a. **To the left** of each non-leaf node, write in the alpha and beta values that would be passed to that node during the search (leave these blank for any nodes that would not be reached by the search).

b. **To the right** of each non-leaf node, write in the alpha and beta values at that node but after the search is done recursively evaluating the node's children (note: in some cases the search won't actually evaluate some of the children due to the pruning rule). Just like in part a, leave these blank for any nodes that would not be reached by the search.

c. **Inside** each non-leaf node, write in the value that the search would return from that node once it is finished recursively evaluating the children (leave it blank for any nodes that would not be reached by the search).

d. **Put an X** through all edges that would not be followed by the search due to the pruning rule. If you put an X through an edge, you do not need to put an X through edges at descendants (since you obviously would never see the descendants if you didn't follow the crossed out edge).

e. What is the game-theoretic value for this game? _____