

## CSE 332: Data Structures and Parallelism

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### QuickCheck: P3 and Search Solutions (due Thursday, November 16th)

#### 0. MiniMax

- (a) Will the move returned by an Alpha-Beta search (always), or (never) be better than the move returned by a MiniMax search on the same board with the same search parameters?

**Solution:**

Never (just faster). Alpha-Beta only prunes branches which are guaranteed not to affect the final result.

- (b) Explain why we *negate* the result of the recursive call in MiniMax.

**Solution:**

We do this in order to simulate the idea of switching between your perspective and your opponent's perspective. By using the assumption that your opponent is playing optimally, if you negate the result of the recursive call, then on your opponent's turn, they will choose the move with the lowest value for you. When the call returns, you choose the highest value from the choices you've simulated for your opponent.

- (c) Why is MiniMax "naturally parallelizable", while Alpha-Beta is not?

**Solution:**

Alpha-Beta threads rely on information computed in sibling threads (the current values of alpha and beta), while MiniMax threads can determine their results independent of any of their siblings.