

Q1-1: Which is NOT one of the game characteristics we considered?

- A. Zero-sum
- B. Fair
- C. Discrete
- D. Deterministic

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Q1-2: Which is true about the kind of games we focus on in our lectures?

- A. Players can make decisions simultaneously
- B. Rolling a die belongs to this kind of games
- C. There is a finite number of states and decisions
- D. Zero-sum ensures fairness

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Q1-3: Which belongs to the kind of games we focus on in our lectures?

- A. Football
- B. Rock-paper-scissors
- C. 2-player checkers
- D. Monopoly

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Q2-1: Which one is true about the game trees for our focused kind of games?

- A. The tree can have infinite different states.
- B. There is no need to expand the tree to terminal nodes.
- C. The game score at the terminal node is the score of the first player.
- D. There can be a node where both players move.

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Q2-2: Which one is true about the game tree for II-Nim?

- A. Different nodes have different game states
- B. The longest trajectory has 5 moves
- C. Both A and B
- D. None of the above

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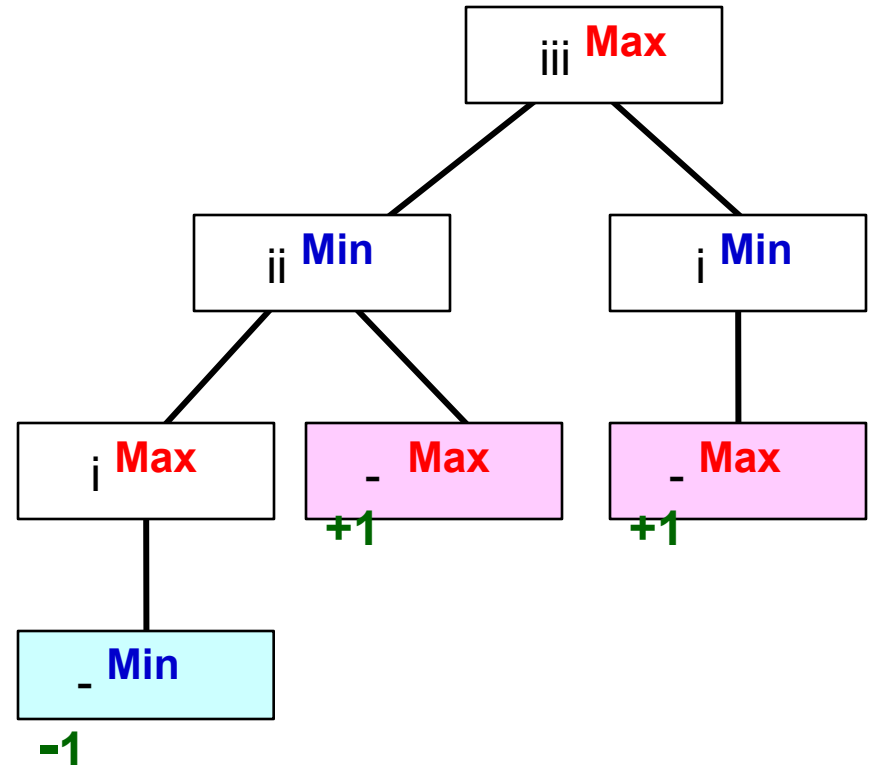


Q2-3: Consider a variant of the Nim game. There is only 1 pile of 3 sticks. And the player takes 1 or 2 sticks from a pile. Which is true about the game tree?

- A. Max always wins along all possible trajectories
- B. The longest trajectory has 3 moves
- C. There are 4 possible trajectories
- D. None of the above

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Q3-1: Let  $b$  be the max number of legal moves at any point, and  $m$  the maximum tree depth. Which is true?

A. Time complexity

$O(bm)$ , space

$O(bm)$

B. Time complexity

$O(bm)$ , space

$O(b^m)$

C. Time complexity

$O(b^m)$ , space

$O(bm)$

D. Time complexity

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D. Time complexity

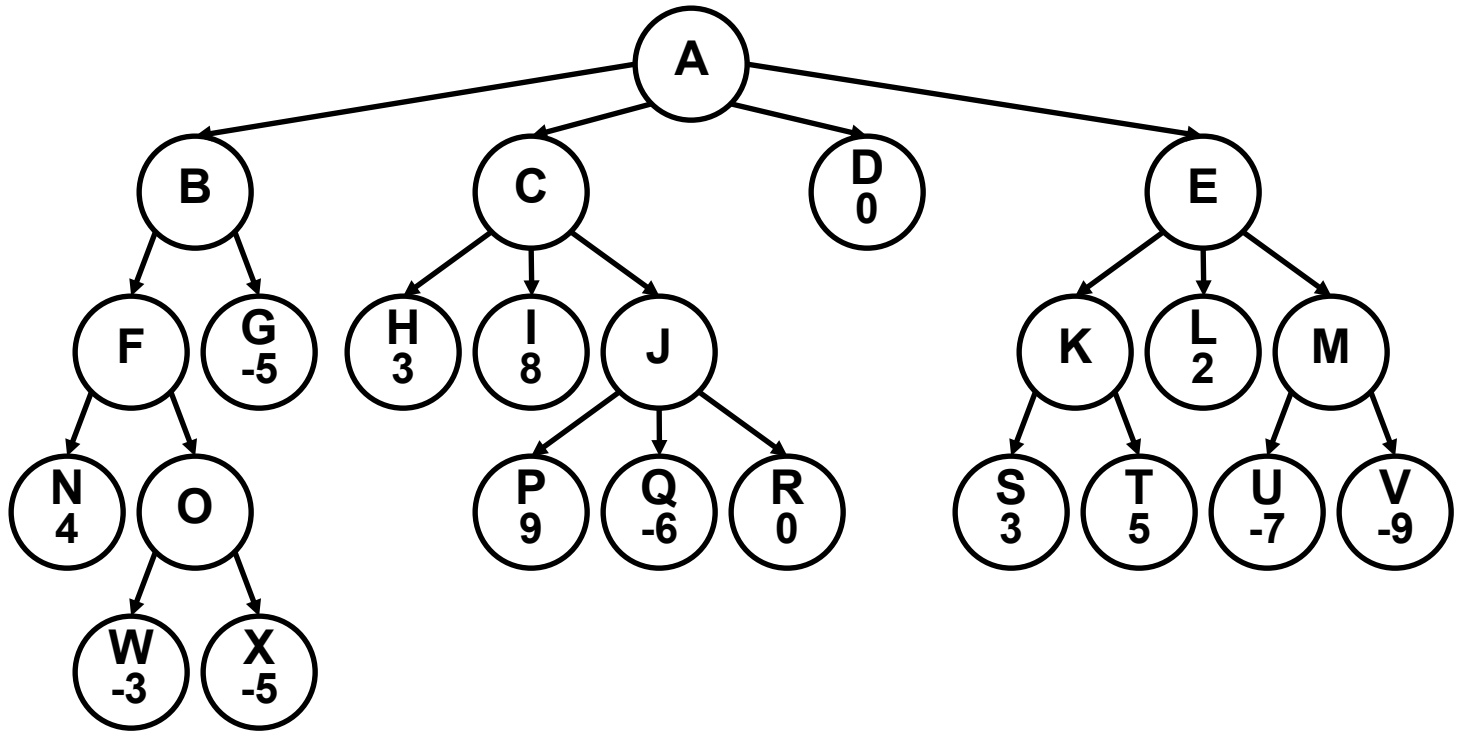
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Q3-2: What's the game theoretic value of node A?

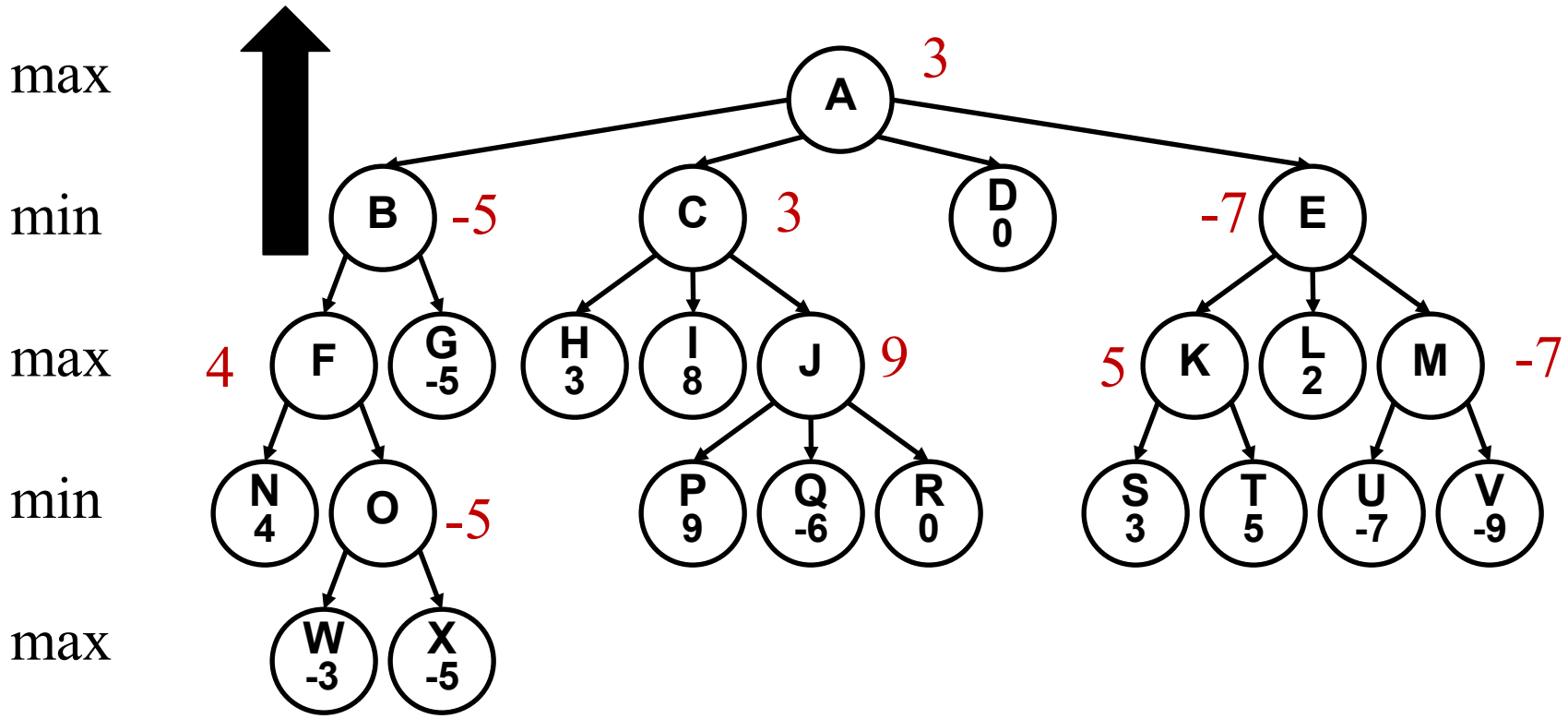
- A. 4
- B. 3
- C. -7
- D. 0

max  
min  
max  
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Q3-3: Consider a variant of the Nim game. There is only one pile with 3 sticks. And the player takes 1 or 2 sticks from a pile. What's the game theoretic value of the initial state?

A. +1

B. -1

C. 0

D. None of the above

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