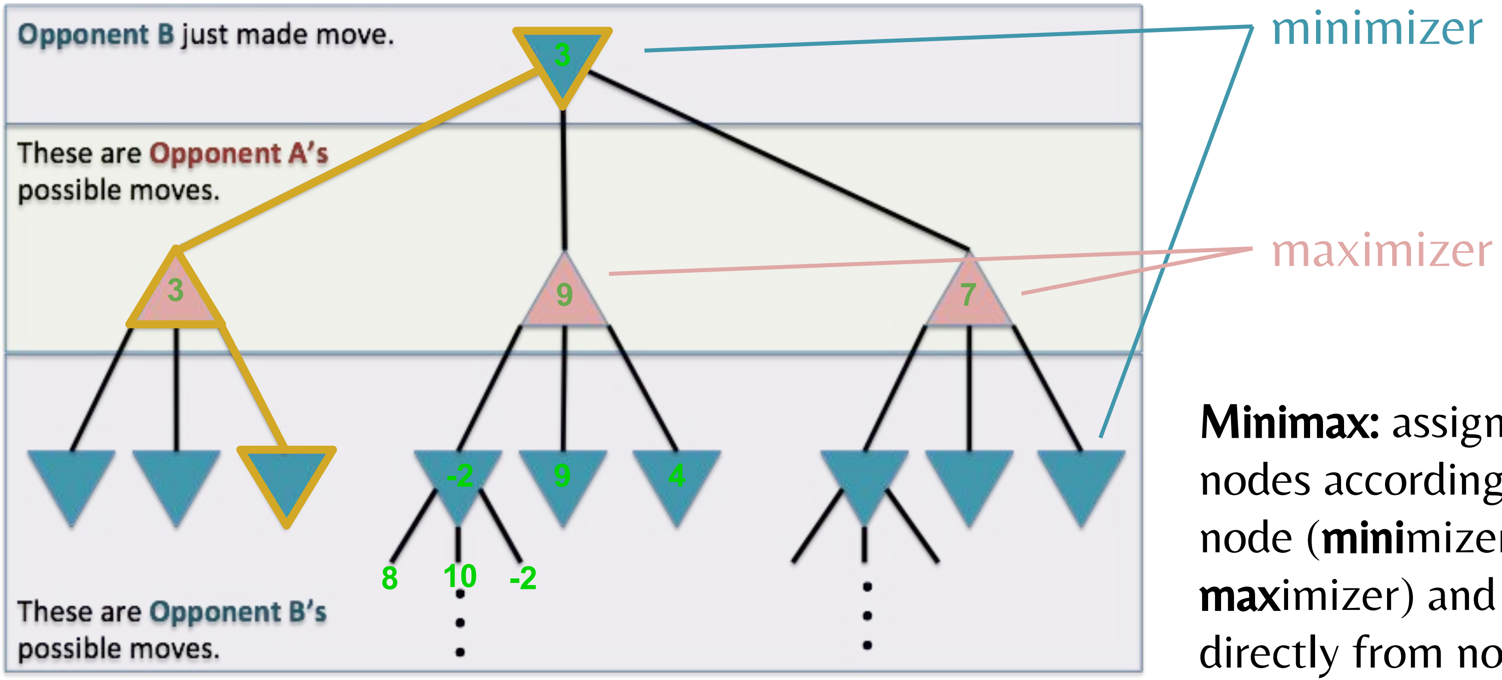
Games :)

Games

- (Search) problems with more than one agent
- Zero-sum games: two or more agents playing against each other with opposite utilities
- Formulation
  - States
  - Actions
  - Transition function
  - Goal test
  - Players
  - Terminal utilities
  - Policy (solution)

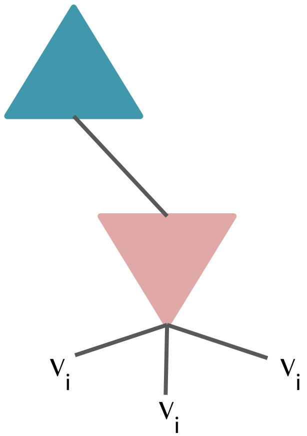
Game Trees

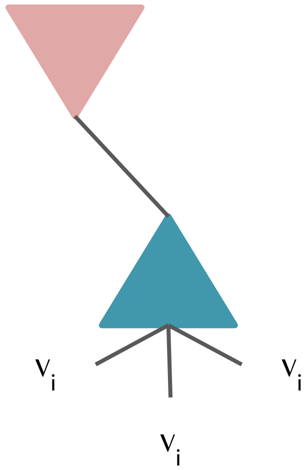


Minimax: assign values to nodes according to type of node (**mini**mizer or **max**imizer) and extract policy directly from node values

Alpha-beta pruning: keep track of the best node option so far for EACH player, to prune paths that we know for a fact will never need to be checked

- α: maximizer's best value so far; init at -∞
  - Compare grandchildren's values v_i with α, prune siblings if $v_i \leq \alpha$
- β: minimizer's best value so far; init at +∞
  - Compare grandchildren's values v_i with β, prune siblings if $v_i \geq \beta$





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