

For Friday

- Research paper due
- Homework:
 - Chapter 10, exercise 43

Final Exam

- Wednesday at 7:50 am
- Here
- Comprehensive

Research Paper

- Any questions?

Alpha-Beta Pruning

- Concept: Avoid looking at subtrees that won't affect the outcome
- Once a subtree is known to be worse than the current best option, don't consider it further

General Principle

- If a node has value n , but the player considering moving to that node has a better choice either at the node's parent or at some higher node in the tree, that node will never be chosen.
- Keep track of MAX's best choice (α) and MIN's best choice (β) and prune any subtree as soon as it is known to be worse than the current α or β value

function Max-Value (state, game, α , β) returns the minimax value of state
if Cutoff-Test(state) then return Eval(state)
for each s in Successors(state) do
 $\alpha \leftarrow \text{Max}(\alpha, \text{Min-Value}(s, \text{game}, \alpha, \beta))$
 if $\alpha \geq \beta$ then return β
end
return α

function Min-Value(state, game, α , β) returns the minimax value of state
if Cutoff-Test(state) then return Eval(state)
for each s in Successors(state) do
 $\beta \leftarrow \text{Min}(\beta, \text{Max-Value}(s, \text{game}, \alpha, \beta))$
 if $\beta \leq \alpha$ then return α
end
return β

Red Black Trees