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Exp4 report

Aim

→ To implement any 2 player game using alpha beta pruning
→ To understand the concept of alpha beta pruning and use it to implement connect 4 - a two player game.

Procedure

→ Analyze the problem and form a solution using alpha beta pruning.
→ Calculate the heuristic cost of every node generated depending on which move is played.
→ The computer is made the maximizing agent while the player is made the minimizing agent.
→ The objective is ~~use~~ to ~~choose~~ ~~to~~ make the best move by the computer so that the computer wins.
→ The a value for the maximizing agent is calculated while for the minimizing agent the beta value is calculated.
→ Nodes are pruned when the value of alpha is greater than beta as exploring those nodes won't give a optimal solution.

Performance Measures

1) Completeness - Alpha beta pruning is complete algorithm
2) Optimal - Alpha beta pruning gives the most optimal solution
3) Time complexity - In worst case $O(b^m)$ where b = branching factor, m = depth of ~~goal~~ tree

In best case $O(b^{m/2})$ only half of the nodes are generated.

4) Space complexity - $O(bp)$ D - depth of the solution

Conclusion

- Hence understood the concept of alpha-beta pruning and implemented the connect 4 game designed to make the computer play optimally.