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**Section:** 3A

**Subject:** ARTIFICIAL INTELLIGENCE(LAB)

**Task No:** Lab-Task 8

**Task-8**

**Min-Max Algorithm**

**1. Introduction:**

This report analyzes the implementation of the Min-Max algorithm in Python. The Min-Max algorithm is a decision-making algorithm used in game theory and artificial intelligence for minimizing the possible loss in a worst-case scenario. It is commonly applied in two-player turn-based games like Tic-Tac-Toe and Chess.

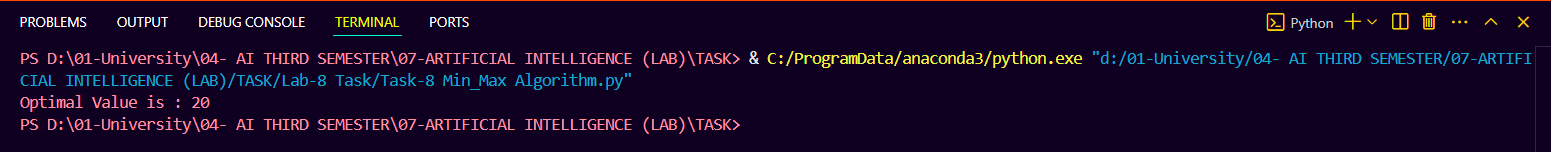
**2. Implementation Details:**

The program recursively applies the Min-Max algorithm to evaluate a game tree and determine the optimal value for a player making the best possible moves.

**3. User Interaction:**

* The implementation correctly follows the Min-Max algorithm principles.
* The recursive approach can be optimized using alpha-beta pruning, which reduces the number of nodes evaluated.
* The algorithm assumes a full binary tree structure, handling uneven game trees would improve robustness.
* Using memorization could help avoid redundant calculations and improve efficiency.

**4. Output:**



**5. Conclusion:**

The Min-Max algorithm is successfully implemented for a simple decision-making scenario. Future enhancements, such as alpha-beta pruning, would make it more efficient for larger game trees.