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**SUBJECT:** Artifical Intelligence (LAB)

**Task No -8**

**Question 1:**

This code was developed for showing the operation of the Minimax Algorithm, an artificial intelligence technique to identify the optimal course of action in two-player games such as checkers, chess, and tic tac toe. Assuming that both players play perfectly, it assists a computer or artificial intelligence in determining the best course of action. While the minimizer seeks to reduce the score, the maximizer wants to obtain the highest possible score. By simulating all possible outcomes, the algorithm finds the move that provides the best result for the maximizer, even if the opponent also plays their best.

**How this code works:**

The final results (leaf node values) of every possible game outcome are listed in the program's initial "scores" list.

The number of levels in the selection tree is represented by the maxDepth value, which is computed using log2(len(scores)).

In order, the minimax() function is executed:

When it's the maximizer's turn, it selects the highest value among its options.  
The minimizer selects the lowest value if it is its turn.

Until the tree reaches the final level (maxDepth), where it returns the values from the scores list, it repeatedly keeps going.

The optimal value, which is the highest absolute score the maximizer can obtain when both players play optimally, is returned by the algorithm after examining every potential outcome.

