Artificial Intelligence Final Project Report

Project Name :- Checkers

Group Members :-

Hafiz Ahsan Faruqui

Saifullah Sattar

Introduction :-

Checkers, also called draughts, board **game**, one of the world's oldest **games**. **Checkers** is played by two persons who oppose each other across a board of 64 light and dark squares, the same as a chessboard. ... At the start of the **game**, each contestant has 12 pieces arranged on the board.

Benefits Of Playing Checkers :-

16 benefits and advantages of Checkers (Draughts):
1. Easy to teach to young kids,
2. A fun way to overcome boredom,
3. Can boost memory recall,
4. Teaches how to make sound judgment calls,
5. Develops concentration skills
6. Teaches patience,
7. Promotes confident decision making,
8. Keeps the brain fit,
9. Provides a bonding/quality time experience,
10. Boosts problem-solving skills,
11. Anyone can play (all-inclusive),
12. Keeps the brain young,
13. Reduces stress & lowers blood pressure,
14. Excellent treatment for people with disabilities,
15. Teaches pre-mathematics skills,
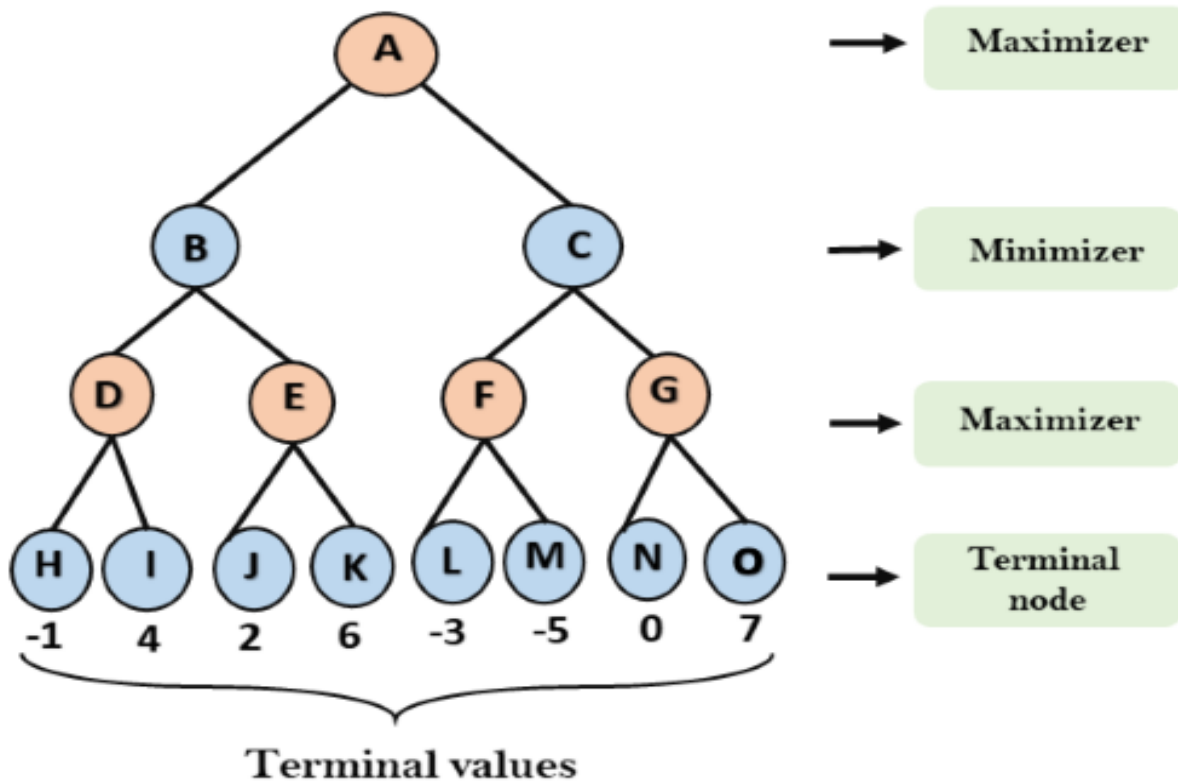16. Teaches effective strategizing skills.

Minimax Algorithm :-

Mini-max algorithm is a recursive or backtracking **algorithm** which is **used** in decision-making and game theory. It provides an optimal move for the player assuming that opponent is also playing optimally. **Mini-Max algorithm** uses recursion to **search** through the game-tree.
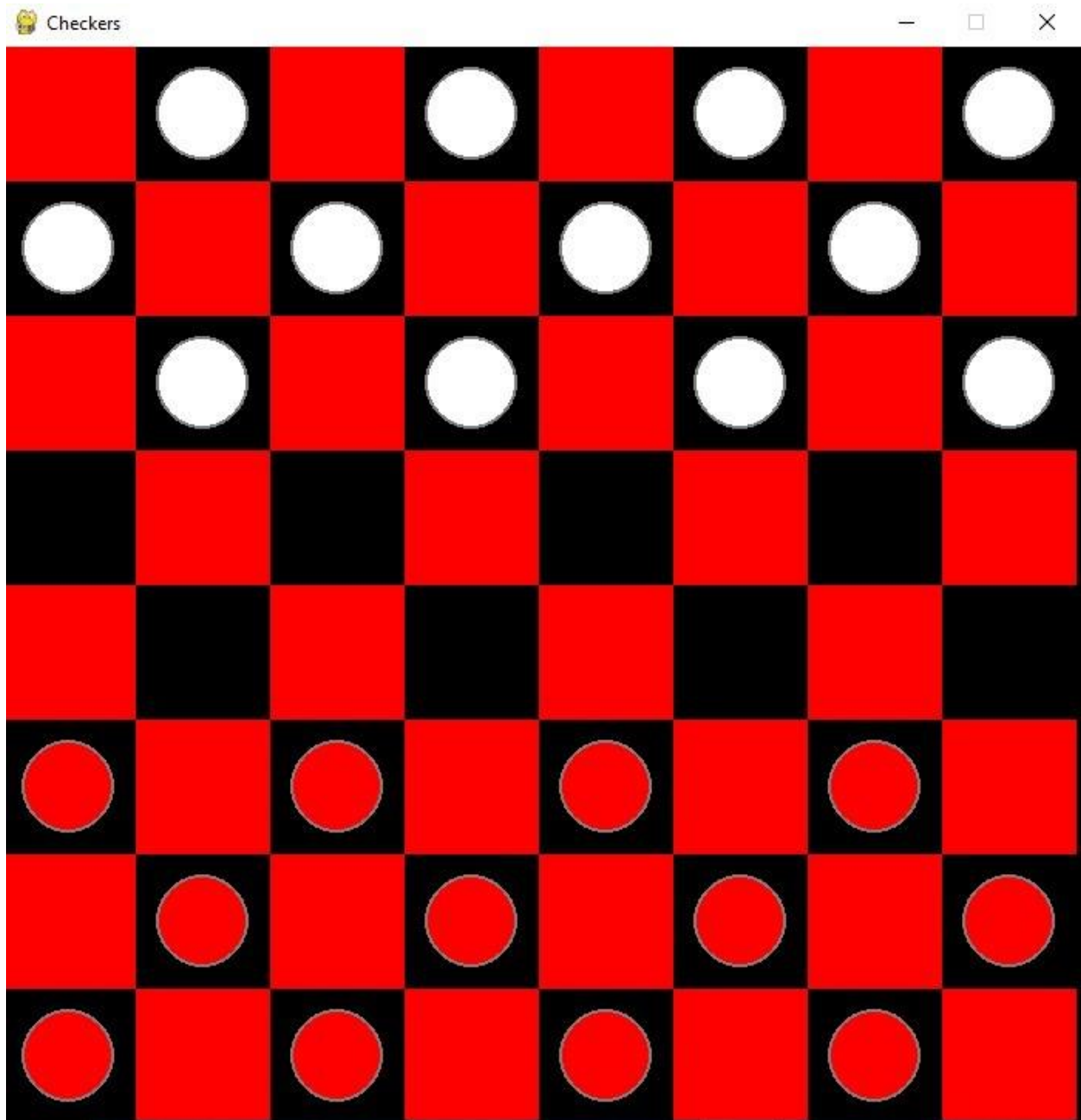
One useful thing to understand about minimax for a game like Checkers is that it's traditionally viewed (to first approximation) as *symmetric* - this means that both players can share the same evaluation function, but simply with the signs flipped, or put another way that it's a zero-sum game: if you evaluate the position as being 4/10ths of a checker in your favor, you know that your opponent's evaluation will be -4/10ths of a checker. This means that you can use the *same* loop structure for both sides and simply multiply
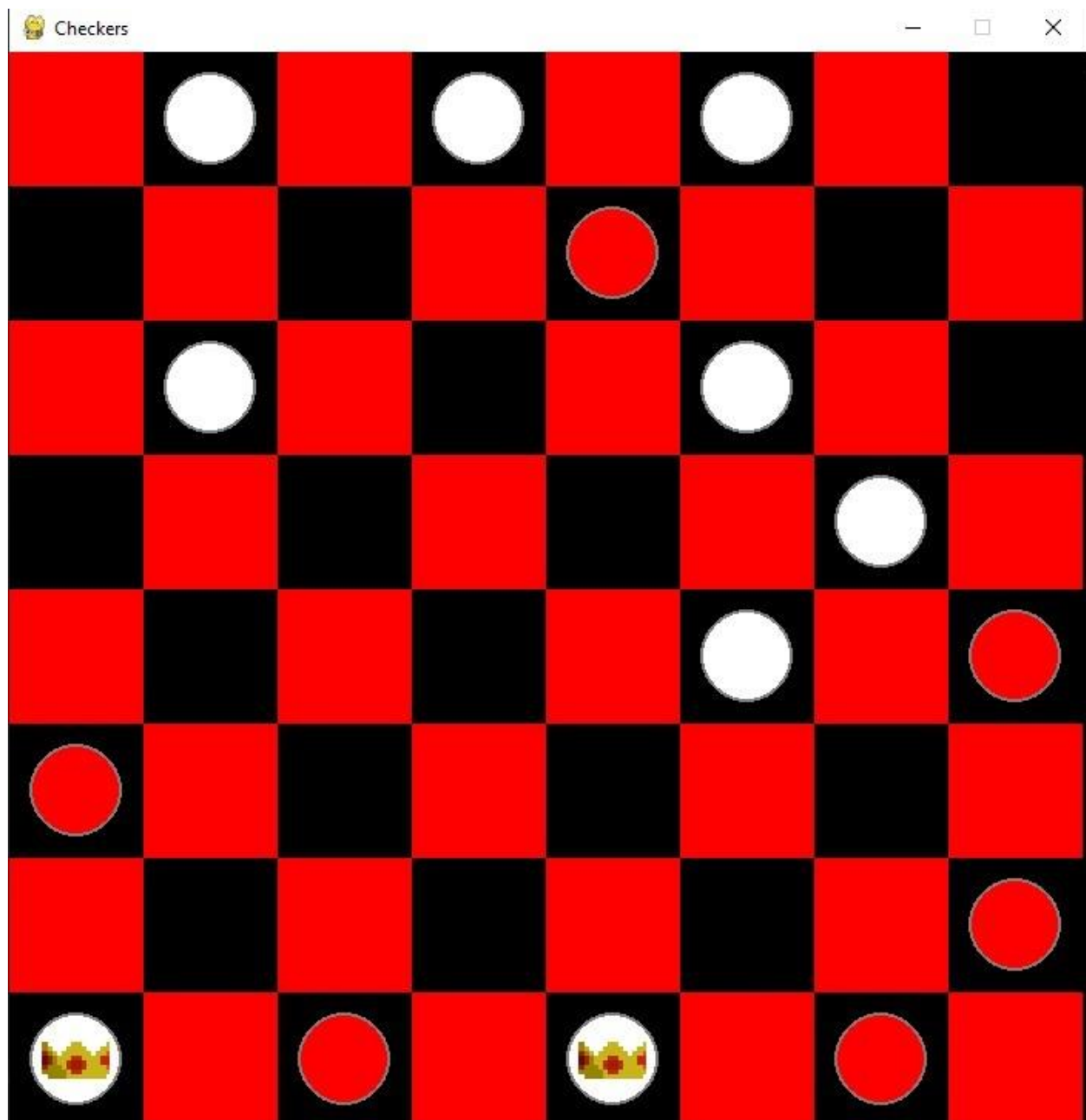
by a 'sign flip', rather than having to have different control structures for min and max (or switching within the loop). In simplest form, the minimax can be done as a classic recursive function, with a termination once you've reached your maximum depth.

Structure :-

Terminal values

Output (GUI) :-