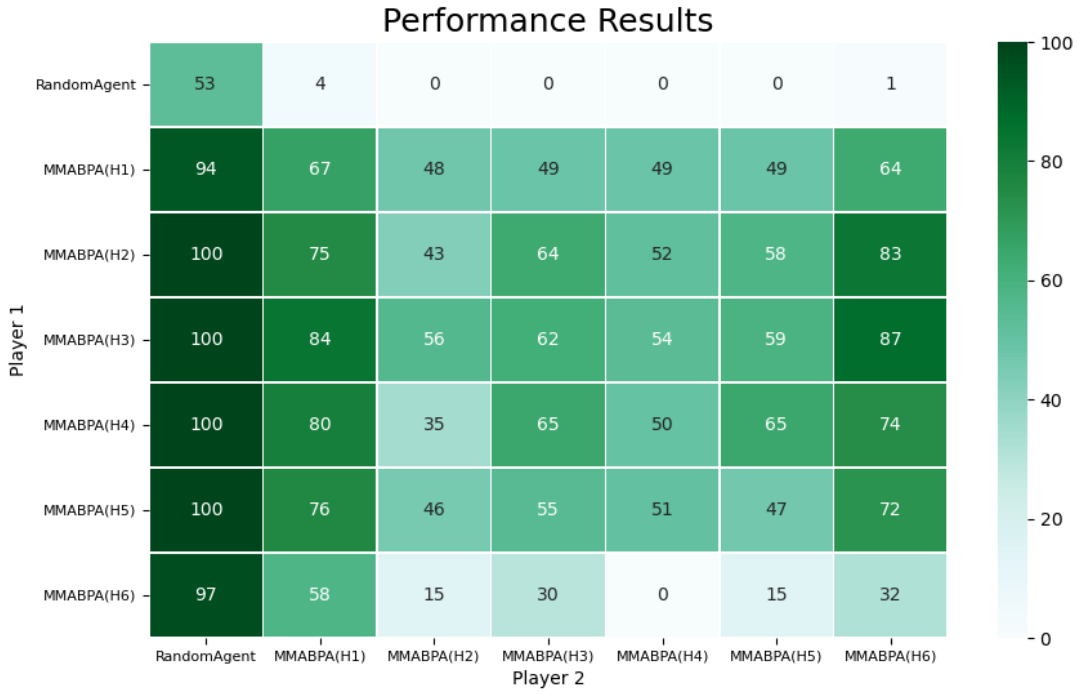
Report on Implementation of Intelligent Agent for Mancala Game

Submitted By: Mahdi Hasnat Siyam (1705003)

- In this assignment I implemented Minimax algorithm with alpha beta pruning.
- Six Heuristics are used for evaluating utility function of terminal node or leaf nodes (when depth is limited).
- Moves are shuffled randomly before calling minimax function to child nodes.
- If there are multiple moves results same peak utility, then tie is broken by the following procedure:
    (1) Capture1 := maximum stone be captured by move1
    (2) Capture2 := maximum stone be captured by move2
    (3) If capture1 != capture2
        Return move associated with maximum capture
    (4) If capture1 != 0
        Return randomly from move1 and move2
    (5) If both move1 and move2 is bonus move
        Return move with larger index
    (6) Else if any of move is bonus
        Return move associated with bonus move
    (7) Else
        Return move randomly from move1 and move2
- Iterative deepening search on Minimax algorithm can be used when computation time is limited for getting next move
- Performance of different heuristics is attached here


Performance Results
RandomAgent
MMABPA(H1)
MMABPA(H2)
MMABPA(H3)
MMABPA(H4)
MMABPA(H5)
MMABPA(H6)
Player 1
Player 2
53 4 0 0 0 0 1
94 67 48 49 49 49 64
100 75 43 64 52 58 83
100 84 56 62 54 59 87
100 80 35 65 50 65 74
100 76 46 55 51 47 72
97 58 15 30 0 15 32
100
80
60
40
20
0